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Stock for New Diesel Passenger Services

THE pattern of new passenger services on British Railways is beginning to take shape as motive power and rolling stock are ordered and placed in service. Particulars are given elsewhere in this issue of the allocation of 390 diesel multiple-unit vehicles to be built in British Railways works and to be in service within the next two years. The railway workshops have already turned out about 1,800 of the 2,800 diesel multiple-unit vehicles and railcars now running and are to build some 550 of the 800 on order. The rest have been or are being constructed, and in many cases designed, by private builders. The Liverpool-Manchester-Leeds-Hull hourly express service mentioned last week is to be worked by "inter-city" six-car vestibule corridor sets each including a buffet car. Fifty-one vehicles, that is, eight sets and three spare cars, are to be constructed at Swindon Works, Western Region. No doubt the new sets, highly powered, as are the existing inter-city sets, will afford fast running over the Pennines and give an east-to-west service through the industrial North with which no other form of transport will be able to compete for speed combined with frequency. Eastleigh Works, Southern Region, will provide 19 three-car trains to work the Oxted line of that Region. They will be coupled in six- or nine-car formations as required and work most of the services over the Oxted line, apart from a few steam trains at peak periods. Diesel working of this heavily-graded line will be replaced eventually by electric traction, to link up with other sections of the Southern Region electrified at 750V. on the third-rail system and afford an alternative electrified route to the South Coast. The rest of the 390 vehicles will be built at Derby Works, London Midland Region. Short-distance services between Liverpool and Manchester and in and out of Marylebone in the suburban area of the former Great Central Railway will be operated by four-car Derby-built sets, making 102 cars to be built there. When main-line diesel trains work between Marylebone and Leicester and beyond, Marylebone presumably will become an all-diesel terminus. The Scottish Region is allotted 26 three-car multiple-unit trains for various services. The rest of the 282 cars to be constructed at Derby will be two-car units for other services in the London Midland Region.

Retirement of Mr. A. J. White

MR. A. J. White, Assistant General Manager, Eastern Region, who is retiring for health reasons, has had a wide variety of achievements in his 45 years' service. He was the first traffic apprentice of the Southern Area, L.N.E.R., and had a good deal of experience on the publicity side of the railway. In 1945 he became Advertising Manager of the L.N.E.R., and on nationalisation was appointed Advertising Officer of the Railway Executive. The well-known British Railways totem was his conception. Since 1948, with various changes of title, he has held his present position, and for some time has been responsible, within the region's general management, for forward planning, engineering and supply. He has a flair for organisation, orderly administration and a strong interest in architectural and industrial design. Under the region's modernisation plan, Mr. White prepared the programme and organised the resources to carry it out. The formation of the regional planning group and office enabled a prompt start to be made when the opportunity came for modernisation. There will be wide regret that Mr. White's health compels him to reduce his activities before some of the projects he has led come into being. He will continue to serve in an advisory capacity, and the reconstruction of Kings Cross will benefit from his wide knowledge and unabated enthusiasm.

More Machine Tool Orders

THE value of machine tools delivered last summer by makers in the United Kingdom was about £6,000,000 a month, compared with £9,000,000 peak in October, 1957, and that of exports £1,500,000 a month in June, 1959, compared with the peak of £2,250,000. There has nevertheless been an improvement in supplies to the home market in the last six months. A continuing upward trend in home orders has been reported by several manufacturers, the first for over two years. The increase in orders from the makers of consumer goods is reported to be most marked, though presumably the greater activity in industry in general is having its effect. The export market was not as much affected as home deliveries by the recent recession, and the pace of improvement is not as great. To judge by the amount of re-equipment in hand and planned on railways overseas, there are good opportunities in this field for British manufacturers who can quote competitive prices and guarantee acceptable deliveries. In the home market implementation of the re-equipment and modernisation plan of British Railways, including the equipment of many new diesel and other workshops, is going ahead and should provide useful business.

Further Import Restrictions Lifted

REMOVAL last Monday of the remaining controls on imports from the dollar area, Western Europe, and other regions seems unlikely to greatly affect makers of railway material. Competition in the home market from foreign manufacturers may possibly occur in the electrical industries. British firms have the advantage of long experience in designing and constructing electric traction, signal and

telecommunication, and marshalling yard equipment, and in installing it on railways in this country. They are as advanced as manufacturers anywhere in the world in designing and building electronic apparatus for application *inter alia*, to railway statistics, accountancy, and compilation of timetables. The Federation of British Industries welcomes the lifting of restrictions on dollar imports as a step towards freer trade, and has expressed the hope that Britain's example will be followed by further relaxation of import restrictions by the U.S.A. The National Union of Manufacturers, which also is in favour of any action leading to wider trade, states that its members are not unduly concerned about foreign competition in home markets.

Retired Railway Officers' Luncheon

THE need for British Railways to make provision for changes in demands was stressed by Mr. John Hay, Joint Parliamentary Under-Secretary, Ministry of Transport, guest of the Retired Railway Officers' Society at their autumn luncheon at the May Fair Hotel, London, last Tuesday. As an instance of such changes he gave the reduction in the demand for movement by rail of coal caused by the fall in output planned by the National Coal Board. Competition from new forms of transport, including the hovercraft, must be faced. Not only the circumstances of 1959, but further developments must be taken into account. In modernising the railways, plans must be flexible. Mr. Hay said that the new Minister of Transport, Mr. Ernest Marples, who was unable to be present, was a dynamic personality who was sparing no effort to find solutions to the problems facing transport, and put them into effect. A brief account of the luncheon is given elsewhere in this issue. Sir John Benstead, Deputy Chairman of the British Transport Commission, proposing the toast of the Society in the absence through illness of Mr. A. B. B. Valentine, Chairman of London Transport Executive, emphasised that railways were a living industry. He paid a tribute to the work of railway officers, past and present, who had been described rightly as men dedicated to their task.

Better Services to Offset Higher Charges

THE small extent to which passenger fares have been increased are clearly shown in the paper, "The Future of Railways," read last week to the Sheffield Geographical Society by Mr. T. A. Germaine, Public Relations Assistant, British Railways, Eastern Region. In 1928 the standard third (now second) class fare was 1½d. a mile. It is now 2¼d., an increase of 50 per cent in 30 years in which many prices have risen 300 to 400 per cent. On November 1 the ordinary second class fare was raised a farthing a mile, and then only over distances up to 200 miles, although authority had been obtained to increase up to 3d. a mile. It is not to make a virtue of necessity to say that passenger fares are not exorbitant, though that makes little difference to public reaction to the increases. Where trains have been made faster, more punctual, or cleaner, the response from the public has been immediate. Electrification of the Southern Region Kent coast lines, Mr. Germaine states, has produced a surge of traffic. On the Great Eastern Line of his own Region operation of diesel trains has converted an annual loss of £500,000 on certain services into £250,000 annual net receipts. These are examples perhaps of particularly successful ameliorations of services, but the other Regions can show equally good results.

Stimulating Interest in A.C. Electrification

THE Indian Railways have been quick to see the advantages of a.c. electrification and are introducing the 25-kV. 50-cycle system on some 1,400 miles of their routes. At the invitation of the Railway Board, Mr. S. B. Warder, Chief Electrical Engineer, British Transport Commission, is to visit India in December to give lectures on British Railways electrification programme. Because the system requires equipment of a type hitherto unfamiliar, and operating and maintenance staff with specialised knowledge, it is only natural that the Indian Railways should show keen interest in the progress being made on British Railways. India affords a good potential market for 50-cycle equipment, and the experience being gained in Britain could be put to good advantage in this direction. Mr. Warder will undoubtedly have this point in mind when he explains how Britain can help not only with technical advice but by supplying equipment. Mr. Warder will be in Bombay from November 27 to December 2, in Calcutta from December 2 to 5, and in New Delhi from December 5 to 9. While in New Delhi he will attend a meeting of the Permanent Commission of the Railway Congress Association who will be discussing problems met in the design of multi-current rolling stock. Mr. Warder's visit and his subsequent discussions will serve as a useful preliminary to the British Railways Electrification Conference to be held in London in 1960.

A Useful Passenger Timetable

THE editions in English of the Japanese National Railways passenger timetables giving abstracts of services have long been examples of good layout and printing, and clarity. The condensed winter timetable, a copy of which has just reached us, includes general information on fares, baggage arrangements, refreshment cars and so on, expressed in good English. The opportunities of economical travel afforded by special tickets for parties of visitors from overseas and by excursion tickets are described. Drawings show the types of accommodation, arranged by night and by day, provided in sleeping cars. The maps with number references to the tables are clear. The choice of symbols is commendable. They include one denoting a crossing by ferryboat and another showing that a through portion or vehicle is attached to another train. No indication is given of boundaries between the six Regions into which the J.N.R. is divided, but the name given to a main line—a Japanese practice—is printed at the top of the table. The train service for instance between Tokyo, Osaka, and (*via* the Kammon Tunnel) the island of Kyushu is prefixed by the words "Tokaido, San-yo Main Line." Reference to the kilometrages shows the speed of many trains to be high for the 3-ft. 6-in. gauge.

Lower Coal Output in Europe

ACCOUNT already has been taken by railway managements on the Continent of the reduction in coal production in the European Common Market. The fall in output within the next few years is estimated at up to 40,000,000 tons, or 15 per cent, from the present figure of some 240,000,000 tons a year. The effects will be felt far from the coal-producing areas, as on the Swiss Federal Railways, which convey much coal to Italy, for instance, over the St. Gotthard line. A large part of the revenue of the Belgian National railways is derived from coal carryings. Production by the Belgian mines, much of which is moved by canal boat, is to be cut by 20 per cent over the next few years. A great deal of capital has been expended in recent years on bogie coal wagons, sidings, and railway facilities at pithead. Whether plans for electrification will be affected is doubtful. The Belgian National Railways had already decided in principle not to embark on any further major scheme affecting lines to or from the coal-mining areas. The S.N.C.F. and the German Federal Railway are believed to have considered the future production of coal in planning further electrification. To what extent coal production in Poland and elsewhere east of the Iron Curtain is affected by the fall in demand is not clear. If it is greatly cut by reduction in requirements in the West, the transit traffic of the German Federal and other railways will be much diminished.

Diesel Conversion of Ipswich Depot

THE rapidly-increasing stock of main-line diesel locomotives on the Great Eastern Line of British Railways, Eastern Region, expected to reach about 250 towards the end of 1960, will be allocated to Stratford, Norwich, Ipswich, and March motive power depots, all of which have been undergoing rebuilding or modernisation for some time. The first to complete the changeover from steam is Ipswich where, at present, 27 Type "2" diesel-electric locomotives for East Anglian main-line routes are examined and maintained in addition to 20-30 diesel shunting units. In fact this is the first main-line motive power depot in the country to be converted from steam to diesel working for both passenger and freight services under the modernisation plan. A description of the depot appears elsewhere in this issue. A large amount of the

necessary civil engineering work was completed in 1954 when the depot was reconstructed for steam use but allowing for the future requirements of diesel traction. The maintenance shop has four bays each flanked by high-level concrete platforms. These are connected to a ramp which leads directly into the adjoining fitting shop where the most efficient plant is installed for filter cleaning, fuel injector testing and so on.

Withdrawal of Train Services in County Donegal

TRAIN services over the remaining 3-ft. gauge lines of the County Donegal Joint Committee system, from Strabane to Letterkenny, Strabane to Killybegs, and Donegal to Ballyshannon, are to be withdrawn on January 1, 1960, in accordance with Orders issued by the Republic of Ireland Minister for Transport & Power, Mr. Erskine H. Childers. These closings, and replacement of the train services by lorries and buses, were predicted in May by Mr. B. L. Curran, Secretary & Manager of the C.D.J.C. undertaking. Losses in working during the 10 years to 1958, he stated, totalled £137,000, and it was impossible to raise enough revenue to meet even day-to-day costs of operation. The County Donegal Railways have suffered, like the broad-gauge systems of Northern Ireland and the Republic, from the growth of private transport and from the shortness of hauls, with the added handicap of a narrow gauge. The C.D.J.C. is a joint undertaking of the Great Northern Railway Board—which in its turn is responsible to the Governments of Northern Ireland and the Republic—and of the British Transport Commission as successor to the former Midland, and its successor, the London Midland & Scottish Railway. From January 1, only 54 miles of narrow-gauge railway, part of the Coras Iompair Eireann system, will remain open in the whole of Ireland.

This, the former West Clare Railway, is the last survivor of the many 3-ft. gauge railways built in Ireland mainly during the fourth quarter of the last century. The narrow gauge was chosen because of cheapness of construction. All the narrow-gauge railways in Ireland have been losing traffic for many years. C.I.E. has made vigorous efforts to improve the services on the West Clare lines.

Passenger Fare Problems

THE enterprise and ingenuity with which the public passenger transport undertakings in Britain, rail, road, and air, take advantage of what latitude is allowed them in fixing and altering fares to deal with fluctuating transport demands, and the limited extent to which the several forms of public transport compete with each other are the main impressions gained from three papers read to the Institute of Transport in London last Monday. Presentation of the three papers was a symposium entitled "Fares Structures." Mr. A. W. Tait, Assistant General Manager, British Railways, Eastern Region, contributed a paper on railway, Mr. A. F. R. Carling, Executive, British Electric Traction Co. Ltd., on road, and Mr. J. L. Grumbridge, General Manager (Commercial), British European Airways, on air fares on services within the United Kingdom. Space allows mention of only a few of the many points made. The ensuing discussion was animated and fruitful in constructive suggestions.

As to competition between the three forms of transport, whilst it is true that trains of British Railways compete with buses for traffic over medium and shorter distances in the provinces, it may surprise some to hear that average journeys by stage carriage bus routes tend to be short. On the 55½-mile Brighton-Portsmouth bus route, Mr. Carling states, the average fare paid is less than 6½d. This route incidentally is parallel with an electrified line of the Southern Region with an intensive service of fast and all-stations trains. That is not to say that train-bus competition is not acute. It is so fierce that, as Mr. Tait shows, the level of British Railways fares on local provincial services is greatly influenced by that of bus fares. Where train services have been improved in speed, comfort, and frequency after replacement of steam by electric or diesel traction, the train in many cases has more than held its own, despite the disadvantageous locations of many railway stations. The many medium- and long-distance motorcoach services in Britain offer low fares and, in the case of some trunk routes, journey times which, though considerably longer than those afforded by rail travel, satisfy those who desire cheap travel without the speed and comfort of the train. Yet express carriage services in 1957 provided only 4.95 per cent. of the road passenger carriers' revenue from licensed operation, against 91.32 from stage carriage services and 3.73 per cent from excursions and tours. In some districts there is traffic for all forms of public transport. Generally, however, the growth in the number of private transport vehicles is having its effect, though not so much on long-distance rail travel.

As regards the British Isles, the main effect of air competition seems to be in services which compete over long distances, as between England and Scotland and on the Channel Islands and Isle of Man and Anglo-Irish routes. On the Anglo-Scottish services, the railway can offer comfortable overnight or, in some cases, forenoon or early evening travel with little risk of serious delay caused by bad weather, and similar considerations apply degree to the overnight railway steamer services to Belfast, Jersey, and so on. Nevertheless B.E.A., as Mr. Grumbridge states, quotes 15-day excursion fares on its main routes within the United Kingdom at about 3¾d. and eight-day excursion fares at 2¾d. to 3d. a mile. To and from places such as the Isle of Man and Jersey, which are largely holiday resorts, traffic is heavy for all forms of transport in the summer, and light in winter. All public passenger transport operators are subject to control by public bodies, more particularly in raising fares, though any decision made by the Transport Tribunal on railway fares applies throughout the country or at least to the extensive London area. Because of the size of British Railways, any general increase in railway fares receives much more publicity than does a rise in the fares of a bus company which operates in a relatively small part of the country. Air fares seem able to be increased without attracting the attention of the national press.

The many varieties of railway fares, their basis, and their application, are admirably described by Mr. Tait. There are, he points out, three principal groups of railway service. First, there are the trunk services, catering for business and holiday travel on fast and semi-fast services operated between the main centres of population or between such centres and holiday resorts. The ruling fare used in this group is the ordinary second class ticket. About three-fifths of railway revenue is derived from these services. Second, the local provincial services provide travel, mostly at cheap day fares, on local stopping services outside London. One-fifth of railway passenger business comes from this group. Third, and covering the remaining fifth of railway revenue are the services on which most travel is on season and early morning tickets. The residential fares, he adds, are used to some extent for travel on local services in the provinces, but most of the railways' business at these fares comes from daily travel to London.

The present fares structure, Mr. Tait believes, is going through an evolutionary process, and must face further adaptation if it is to safeguard survival of railway passenger services in rapidly changing circumstances. The most notable development in the formal structure of fares has taken place in recent years on the local provincial services outside the London area. Most of the fares on those services have no longer any defined relation to the rest of the structure, but are determined by the level of the local bus fares. This has taken place at the same time as the radical change in operating by conversion from steam traction. There is a flexibility in the fares charged on these services subject to a maximum equal to the road fares fixed by the Traffic Commissioners who license the road services. Modernisation has brought about a substantial reduction in costs, but the economics of particular services are being closely watched and where a service is not paying its way, it is liable to be withdrawn. The remaining two main fare groups have now two striking structural characteristics in common. First there is taper with distance. Season ticket rates have always included this feature. Tapering has now been adopted for the operative scale of ordinary fares over 200 miles, although the maximum remains at a uniform rate per mile. The second feature, in common in the fares structure in use on trunk and commuter services, is off-peak fares at lower levels than the ruling fare. Here the roles were reversed. Off-peak fares have been in operation on fast services for some time. For residential travel those introduced at the beginning of this month are an innovation.

As to the future, he believes that, just as fares for local provincial services have had to be kept to the level of bus fares, so air competition for the longer journeys and the private car

at all distances, will bring about a similar development in the fares structure of the fast and semi-fast services. External economic forces will be the main factor in bringing about this change. The recent developments in the organisation of traffic management in the Regions of British Railways towards greater decentralisation should provide an instrument for carrying it out. Local railway managements are being held responsible for the costs they incur and a logical next step would be to give them the further responsibility of fixing fares. Many decisions have still to be taken to withdraw or modernise particular services and the level of fare is a factor which must be considered.

The effect on the structure of railway fares would be two-fold. The general level of the ruling fare would vary as between one route and another, and the extent of special fares designed to fill empty seats will also differ as between one service and another. There are two difficulties. The first is the sacrifice of simplicity. The second difficulty lies in the administrative complications of through booking. The simplest solution would seem to be to limit through bookings to the principal stations served by fast and semi-fast trains and to base through fares on a summation of " local " fares on the train services covered by the through journey.

A radical change in the structure of the season ticket fares seems less likely. The larger the volume of traffic, the greater the need for a simple structure which must mean more averaging of demand. Commuter services have more of a monopoly character and operative fares may well continue to be subject to some measure of statutory control. The boundaries of the London area were very widely drawn, resulting in what is, perhaps, too great an area of averaging of fare levels. A revision of these boundaries, Mr. Tait maintains, might assist the full commercial development of some of the British Railway service into London, with benefit both to the user and to the finances of the British Transport Commission.

London Midland Region Winter Timetables

THE effect of the probable delay to passenger trains due to electrification work between Euston and Birmingham, Wolverhampton, Liverpool and Manchester is seen in full in the winter timetables of British Railways, London Midland Region. While on the average another 8 min. is added to most of the schedules between these points, the public timetables show arrivals at the terminals 10—13 min. later still, so that the average addition to public times is about 20 min. per train.

The only exceptions are the " Royal Scot," 9.50 down express to Perth, the " Midday Scot," and the " Caledonian," in the case of which working and public times coincide, but as these trains are allowed 32 min. recovery time from Euston to Crewe, and 28—31 min. from Crewe to Euston, any further additions to the published times would afford very slow journeys. Actually the four trains mentioned, strictly limited in weight to 270 tons tare (eight coaches), are allowed 178 min. for the 158 miles from Euston to passing Crewe, whereas the 7.45 down " Lancastrian," often loading to over 450 tons, has to cover the same distance in 173 min., with a 3-min. Watford stop included. Most of the " XL limit " and " Special limit " trains between Euston and Crewe have 12 min. recovery in all their working times. By comparison, the overall times of the night trains between Euston and Scotland are practically unchanged.

As mentioned in the review of the Scottish Region winter services in our October 23 issue, the " Royal Scot," " Midday Scot," and " Caledonian," now leaving Euston at 9.5 a.m., 1.5, and 3.45 p.m. respectively, all call only at Carlisle between London and Glasgow, as also the 8.30 a.m. " Caledonian," 10 a.m. " Royal Scot," and 1.15 p.m. " Midday Scot " from Glasgow, and all are allowed 7¼ hr. The 9.50 a.m. down continues as a through train to Perth, calling only at Crewe between Euston and Carlisle. The former 3.35 p.m. down Manchester express now leaves Euston at 3.50 p.m., so as to follow the " Caledonian," and thus reaches Manchester only 7 min. ahead of the 4.20 p.m. down. The 6.15 p.m. from Euston to Preston calls additionally at Rugby, giving a connection to Coventry. In the up direction the 4 p.m. from Liverpool to Euston is diverted via Northampton (and might well stop there to give an additional service) so as to allow the " Midday Scot " to pass, and so is 38 min. slower in the public book, which shows a London arrival at 9 p.m The acceleration of the morning and afternoon services from Glasgow and Edinburgh to Liverpool and Manchester, referred to in our review of the Scottish Region services, is partly made south of Carlisle. The 10.50 a.m. from Glasgow (10.55 from Edinburgh) ceases to call at Penrith and Carnforth, and this and the 4.30 p.m. from Glasgow (4.35 p.m. from Edinburgh) are now non-stop between Preston and both Liverpool and Manchester, as are the corresponding northbound services.

The only remaining express services between Euston and Coventry, Birmingham and Wolverhampton are the 8.45 a.m., 4.25, 6.55 and 9.20 p.m. down, and the 7.25 and 10.10 a.m. and 5 p.m. from Birmingham to Euston. All but one of these seven run via Northampton, and so offer no comparison in time with the Paddington-Birmingham-Wolverhampton trains of the Western Region. These alterations, necessitated by acceleration of electrification works, were the subject of an editorial article in our October 9 issue.

Elsewhere on the Western Division of the London Midland Region introduction of diesel trains between Cambridge, Bedford, and Bletchley has not resulted in any acceleration of service.

The 2.35 p.m. from Euston to Manchester has now been diverted to St. Pancras, leaving at 1.55 p.m. and non-stop to Stoke-on-Trent *via* Leicester, Trent, Stenson Junction, and the former North Staffordshire Railway line. It is likely to be used only by Stoke-on-Trent and Macclesfield passengers, as the 2.25 p.m. Midland Division express from St. Pancras leaves London 30 min. later and reaches Manchester Central 23 min. earlier. Similarly, the 12 noon Manchester London Road runs non-stop from Stoke-on-Trent to St. Pancras, arriving at 4.30 p.m., 42 min. later than its former arrival at Euston. In the Midland Division itself there are few changes of note, other than a slight easing of the times of certain expresses between Manchester and Derby, to an extent not exceeding 5 min.

Over the main line of the former Great Central Railway the long-distance trains have had a temporary reprieve. The only change of note is that the 6.18 p.m. from Marylebone, the former " Master Cutler," now leaves at 7.15 p.m. and is diverted from the High Wycombe to the Aylesbury route, calling additionally at Aylesbury, Woodford Halse, and Loughborough and reaching Sheffield at 11.13 instead of 10.1 p.m. Also, until the end of April, the through York-Bournemouth train is now a diesel working between York and Banbury only, connecting at Banbury with the through Birkenhead-Bournemouth train of the Western and Southern Regions.

Urban Transport Problems

MUCH thought is being given in London and other cities to building or adding to urban railways, underground or overhead, or standard railways or monorails as means of transporting passengers and goods clear of the streets. The rapid increase in the number of private motor cars and the growth of some cities in Canada has aggravated the problem of congestion. Those concerned with city transport in Canada and elsewhere will find helpful the paper " The Future of Mass Transportation," delivered recently by Colonel S. H. Bingham to the Community Planning Association in Montreal. Besides his past service as Chairman of the Board of Transportation of New York City and General Manager of the New York City Transit Authority, Colonel Bingham has occupied senior executive positions in, or acted as a consultant for railways and monorails in several countries.

Cities in the future, he believes, will be " quiet, traffic-free, fume-free and weather controlled." The business traveller will park his car at the edge of the centre of the city, board a monorail train, and reach his place of business in a fraction of the time it takes today. On reaching the heart of the city the traveller will proceed by transport such as moving pavements. Monorails can be above ground or underground in the heart of the city.

He urges greater use of mass transport and restriction of private cars in the business areas. To obtain an efficient system of urban transport, he states, co-ordination is necessary. By this is meant the design of a system which uses each mode of travel in that capacity which it is best able to fill to achieve a fast, safe, efficient, comfortable and inexpensive movement of people. To accomplish this, piecemeal planning must be

replaced by planning of all facilities. A great deal has been achieved in this direction in London, Paris, and other cities, though the problem remains of the private motorcar which blocks the streets and impedes the bus, which has far greater carrying capacity.

In community planning, Colonel Bingham states, the challenge of formulating practicable schemes, both in rehabilitating housing and in new commercial and industrial structures and in finding the means for the fast movement of people, produces many problems which can and will, it is hoped, be solved as a result of technological development. He points out that of the measures he predicts for cities in the future many are actually in use. Some indication of progress in construction of monorails in the U.S.A. was given in our September 4 issue.

Bridge Construction in China

EXPERIENCE gained during the civil wars of the last 40 years is being turned to good service by Chinese engineers in the building of new bridges throughout the country as part of the programme of railway re-habilitation and extension. After sharpening their wits on several large but minor bridges, the bridge engineers started on what is undoubtedly China's most important bridge: the Yangtse bridge at Wuhan (Hankow) This great structure 5,500 ft. long, and 270 ft. above the water, is on eight spans. It carries double-track railway on its lower deck and a road on its upper deck. While the Chinese make no secret of the fact that they employed Russian advisers, and the design undoubtedly owes a good deal to big bridges built by the British in former years, nevertheless the credit undoubtedly goes to the Chinese staff for a notable feat.

After the completion of this bridge, the construction staff divided up. Some moved North and bridged the Yellow River Gorge at Tungkuan, thus uniting the Shansi railways with the main Western trunk line. Other members of the staff are tackling one of the most difficult bridge problems in the world—the bridge carrying the Peking-Canton Railway across the Yellow River 300 miles downstream from the bridge already mentioned. This bridge was first built by French and Belgian engineers as part of the Peking-Hankow railway. They were faced by the Yellow River, a mass of shifting treacherous sand and loess two miles wide, through which a river flowed that might rise 25 ft. without much warning.

To complete the line quickly, they erected a semi-permanent bridge on screw-piles which was opened in 1904 and intended to last not more than 10 years. Circumstances beyond the control of the railways have caused it to last until the present day—a monument to the skill of its builders and to the devoted maintenance work done by the bridge engineers. It is now to be replaced by a new structure somewhat further downstream. The ability to do this, is due in large part to the work that has been done in taming the Yellow River. The barrage at San Min Gorge, as well as smaller barrages further upstream have greatly reduced the ability of the river to flood suddenly, and have also much reduced the flow of suspended loess which gives the river its name. With these aids the engineers have successfully got down to bedrock and no less than 70 piers are now rising. The bridge will have a total length of 9,500 ft. and will carry a double-track railway.

Another notable bridge now under construction is one across the Upper Yangtse at Paishatuo near Chungking. This will be about 2,700 ft. long and will carry double-track and a road. Its completion will link up the Chungking-Chengtu railway with the new line to Kweiyang now nearing completion. The completion of this section will form part of a new North to South trunk line nearly 2,000 miles long. A bridge similar in several respects is being built farther east at Nanchang. This will link the Nanchang-Kiukiang railway with the main Shanghai-Canton trunk line.

Still another notable bridge is that over the Pearl River near Canton. An American company made a previous attempt to bridge this river many years ago, but found that the lack of rock foundations eventually caused the piers to settle and cant because of the softness of the subsoil. The Chinese are now building a bridge of entirely different design on a new site and it is to be hoped that they will have better fortune. They have been delayed by the recent floods, but construction is now proceeding again.

In all these bridges except the last-named a new system of pier construction is in use. This was introduced by Russian engineers for the Yangtse bridge and appears to be very successful when the rock is not too hard. Briefly, the system dispenses with caissons. Groups of reinforced concrete tubes are sunk through the river bed to bedrock. Rigs are then inserted in the tubes which cut into the rock by the electro-percussive method to a prescribed depth. Reinforcing steel is then inserted and concrete poured to convert each tube to a solid reinforced concrete pillar firmly based on bedrock. A steel coffer-dam is then built round the group of pillars, the water is pumped out, and the piers are built round them. The diameter of the tubes has varied with experience and with rock conditions. The tubes in the Yangtse bridge were 5 ft. 1 in. dia; those for the Yellow River bridge about 12 ft. in dia., while those for Nanchang are no less than 19 ft. in diameter. The average time of completing a pier at Nanchang is reported to have been the extraordinarily short time of 12 days.

Netherlands Railways in 1958

A REDUCTION in net receipts compared with the preceding year is shown in the Netherlands Railways report for 1958. Net receipts were fl. 200,000 against fl. 3,500,000 in 1957. With the balance accrued in previous years, the amount carried forward is fl. 5,100,000. Total receipts fell from fl. 506,700,000 to 493,100,000. Expenditure was reduced from fl. 503,200,000 to 492,900,000, of which fl. 7,000,000 represented economies, despite increases in rates of pay. The increase in passenger fares and other charges applied from April, 1957, was felt throughout the year. Passenger traffic receipts fell by fl. 800,000 and goods by fl. 12,200,000. fl. 1,500,000 was set aside for improving protection at level crossings.

The number of passenger journeys was 186,800,000, against 189,400,000, with a decline of 1.9 per cent in passenger mileage. The average journey distance also was slightly lower, about 2 per cent in internal traffic, but this was compensated by an improvement in international traffic, except for travel on leave by Allied forces personnel. First class travel, which has been declining for some time, remained at about the 1957 level. The fall in goods traffic was more serious. There was a drop of 6.5 per cent in the tonnage conveyed. A little more than one-half of this was accounted for by internal traffic. The railways nevertheless maintained their share in the available general transport business, which itself registered a decline. Coal traffic with other countries was less. In imports of other materials and finished products the total loadings were 11.6 per cent down on 1957.

Electric and diesel traction accounted for 85 and 15 per cent respectively of all train working. At the end of 1958 total route mileage was just over 2,000, of which 50.3 per cent was electrified. The staff numbered 32,699 against 38,872 at the end of 1957. The " Trans-Europ Expresses," in developing which the Netherlands Railways took a prominent part, achieved further popularity. Use of Interfrigo wagons remained at about the 1957 figure. The Netherlands, with 27 per cent, is the largest user of this service.

The Alkmaar-Den Helder line was electrified and many new station buildings and layouts completed. About 70 route-miles of automatic colour-light signalling were brought into service, bringing the total to some 22 per cent of the whole system. Nine stations, including Rotterdam Central, were provided with the latest type of electrical signalling. Eighteen public and 27 private level crossings were abolished, and flashing light warning signals and automatic half barriers were installed at a number of others. At December 31, 1958, 227 unattended crossings had flashing lights and 91 had half barriers of which 70 were controlled entirely automatically. Improved flood lighting was in use at 765 crossings.

At Amsterdam Rietlanden a central control room for supervision of traction power switching and circuit breakers in a large area of the province of North Holland was brought into service. The last steam and some older diesel locomotives were disposed of and with the delivery of 14 new diesel-electric engines, the programme of replacing steam motive power has been completed. New rolling stock was acquired for the electric train sets used in internal services and for the through trains to and from Belgium, bringing the total seating capacity to 116,916. Special wagons acquired included 100 refrigerator vans. Scrapping of old stock continued. The total number of wagons fell from 22,232 to 20,894.

XUM

LETTERS TO THE EDITOR

(The Editor is not responsible for opinions of Correspondents)

Selection and Training of Railway Staff

November 3

SIR,—Mr. H. C. Johnson, in his Presidential address to the Railway Students' Association, on which you commented in your October 30 issue, drew attention to " the unfairness and serious loss of efficiency which result when keen, intelligent and ambitious men are passed over or, worse still, not even noticed." But he does not give any indication how this state of affairs can be remedied.

In your December 14, 1951, issue you were good enough to publish a letter from me, in which I pointed out that " new thought on railway staff problems is overdue. . . . The alternative to the present scheme is for the Railway Executive to take a direct and personal interest in each individual by appointing him to a position for which he is most suited, make systematic inquiry from time to time to see that he is being considered and obtains suitable promotion, and review the history of each person at intervals to eliminate undue favouritism and inefficiency." I still consider that here lies the solution for good, progressive and efficient staff relations.

I am a superannuitant with nearly 50 years' railway service, engaged for the greater part of that time on first-hand dealing with staff.

Yours faithfully,

ROBERT W. LEWIS

Beth-el, 104, Leggatts Way, Watford

Diesel and Electric Traction

October 27

SIR,—Mr. L. Irvine-Brown, in his letter in your October 23 issue, makes some comparisons between electric and diesel-electric locomotives. It is, of course, quite true that many Bo Bo electric locomotives running in Europe weight less than 80 tons and have outputs up to 4,000 h.p., while a diesel-electric of comparable power would weight 320 tons. This is, of course, what would be expected when realising the diesel has in addition to the electric traction motors, an engine and main generator to carry around.

What is interesting, is the statement that the order for more diesel locomotives, are for locomotives which are 35 per cent more powerful than was considered ample previously. By whom were the earlier ones considered powerful enough ? Certainly I have advocated both in your columns and at lectures of the various learned societies, much more powerful engines than those ordered.

Admittedly, diesels up to 4,000 h.p. are extremely costly and technically almost impossible, but straight electrics of 4,000 h.p. with Bo Bo wheel notations are technically feasible and are absolutely necessary for our main line expresses if they are to live up to their names and to arrive at their destinations on time.

Yours faithfully,

HERBERT CHARNLEY

Brook House, Clayton-le-Woods, near Chorley

October 26

SIR.—Under this heading you printed on October 23 a letter from Mr. L. Irvine-Brown criticising the movement of freight on American Railroads, which was the subject of an article in your October 9 issue. Mr. Irvine-Brown wrote about " their inability to reach a train speed between terminals of a modest 20 m.p.h.," and said that owing to improvements in signalling, marshalling yards and track " most of the small shunting movements had been dispensed with." Actually in 1938 the railroads had about 8,300 locomotives employed in yard shunting and also spent 23 per cent of total train hours on shunting at wayside stations. That percentage varied from 10 on the Union Pacific to 25 on the Santa Fe, 17 on the Pennsylvania and nearly 40 the New York Central.

The all-line freight train speed of 19·2 miles an hour in 1958 was an average figure for 110 railroads operating 220,560 miles of road. Slow movement on some minor lines reduced the average. Of the major lines the Union Pacific, operating 9,750 miles in difficult terrain, attained a speed of 26.4 miles an hour. It hauled a net train load of 1,340 tons, turned out 85,650 gross ton miles in a train hour and held its total operating ratio down to 74 per cent.

The Santa Fe, working 13,080 miles of road, entirely for the first time by diesel power, shortened the transit time for freight between Chicago and the Pacific Coast by 24 hours last year. Moving a train load of 1,297 tons at 23 miles an hour, it produced 77,800 gross ton miles in a train hour, 3 per cent more than in 1957, and had a total operating ratio of 74·6 per cent. So the Santa Fe raised its dividend payments and increased the number of its stockholders.

In contrast the Pennsylvania's motive power at the end of 1958 consisted of 2,415 diesel and 277 electric units, which were employed on 662 miles of road, electrified before the last war in an area where traffic is very dense. The P.R.R. moved a train load of 1,468 tons at 17·8 m.p.h. and turned out 55,967 gross ton miles in a train-hour. Its total operating ratio of 84·7 per cent was so high that a deficit for the year was avoided by a narrow margin.

The number of electric units owned by all the U.S.A. railroads decreased from 868 in 1948 to 559 in 1958, or by 35 per cent. The diesel scored because it could go anywhere and do anything without the costly equipment required for electric traction. A good example of the economies due to the use of diesel power was a drop of 80 per cent in helper freight locomotive miles from 42 million in 1948 to 8 million last year—a valuable saving in these times of high wages for American locomotive crews.

Yours faithfully,

YOUR CORRESPONDENT

Westminster, S.W.1

New Method of Design Calculation

November 6

SIR,—The recent interest aroused in the use of the Argyris matrix-force method of structural analysis for rolling stock design, referred to in your October 23 and 30 issues, prompts us to put forward our views on the adoption of the technique.

Such opinions are based on our analysis by this method of a hypothetical railway coach as part of a programme appraising new methods in engineering design which promise advantages over existing techniques.

The first real step in the mathematical analysis of integral rolling stock was that due to Sutter. Strictly, this technique is one of idealisation which keeps the calculations within reasonable bounds at the expense of reliable results. The method of analysing the idealised structure can be the choice of the designer.

The coming of the electronic digital computer has in recent years benefited the structural analyst by affording facilities for the rapid solution of linear simultaneous equations. The matrix-force method represents a logical advance in structural analysis by transferring the simple but tedious arithmetic of calculating the equation coefficients, to the computer. Thus we have a tool which can cope with any degree of idealisation. The method can be applied at an early stage in the design and allows modifications to be made during the course of design with little extra work. A coach incorporating present-day features idealised to a reasonable degree, has been analysed to assess the feasibility of the method.

The findings amply illustrate the concise and orderly way in which the necessary information is presented to the computer, and appears in all respects an extremely useful advance in the mathematical analysis of rolling stock.

Summarising, the matrix-force method in conjunction with a computer permits the expedient analysis of integral structures idealised to any degree, and thus the designer is not limited to a Sutter idealisation (which leaves much to be desired) on account of the work entailed.

Yours faithfully,

A. H. LUCAS

Norris Brothers Limited, Mid-Sussex House,
62, Church Road, Burgess Hill, Sussex.

THE SCRAP HEAP

Electric Traction Marches On (1899)

Electricity becomes more and more an accessory of our daily life. This is strikingly shown in the increased facilities which are gradually being extended over the country in regard to electric lighting, electric locomotion and electric communication. The horse as motive power for tramways is fast being superseded by the electric fluid, and even on his special vantage grounds—the country roads—his superiority is being assailed by the mysterious force.—*From "The Financial Times" of November* 4, 1899.

[The City & South London Railway, the first underground electric railway in the world, had been opened in 1890 and the Waterloo & City in 1898. The Central London Railway was opened in 1900. "Electric Broughams" and other early electric-battery road vehicles were not a success.—ED., *R.G.*]

Very Last Dutch Steam Locomotive

The arrival under its own steam in the Netherlands Railways Museum at Utrecht last year, of what was then thought to be the last steam locomotive in Holland to be preserved, was illustrated in the Scrap Heap of February 7, 1958. This engine was a four-cylinder 4-6-0, one of a class designed and largely built by Beyer, Peacock & Co. Ltd., though this particular locomotive, No. 3737, was built by Werkspoor in 1911. The Director of the Museum, Dr. F. F. de Bruyn, to whom we are indebted for the photograph reproduced below, states that on October 15 a four-cylinder simple 4-8-4 tank locomotive, the last steam locomotive to be built for the Netherlands Railways, was placed among the exhibits. This, No. 6317, was built by Schwartzkopff in 1931, to Dutch design. New motive power for the Netherlands since then has consisted of diesel-electric and electric locomotives and multiple-unit trains. No. 6317 weighs 125 tons. The driving wheels are 5 ft. 1 in. dia. The class could achieve speeds of 65 m.p.h. and was used for heavy goods and passenger trains. The high-slung boiler contributes to an imposing appearance.

Underground "Solid" Bullseye Sign

London Transport Executive has removed for preservation one of the original "solid" bullseye signs in use on the District Railway. This was on the eastbound platform at Westminster Station. Signs of this type, a direct forerunner of the bar-and-circle device now used by L.T.E., were introduced on the District and London Electric Railways over 50 years ago. The station name is in white on a blue horizontal panel super-imposed on a solid red circle. Above this is a small blue panel with the words "Way Out" in white. In the upper part is another section of wording, blacked out during the last war, which read "For the Abbey and Houses of Parliament." This lettering was in blue on the white background. The sign is of enamel on two iron sheets. Underneath the name there was at one time another enamelled iron panel suitable for a map or two double posters.

High Speed in Ireland in 1842

Although lines worked on the "atmospheric" system in Britain in the 1840s, namely, sections of the London & Croydon, South Devon, and Kingstown & Dalkey Railways, were failures because maintenance was too costly and breakdowns too frequent, high speeds were reported. In 1842, 84 m.p.h. is stated to have been attained on the Kingstown & Dalkey Railway. Mr. D. F. Moore related recently in the *Irish Evening Press* that this was the result of omission to couple coaches to the traction vehicle. To this was attached the piston which ran in the "atmospheric" tube between the rails and was propelled by vacuum in the tube. The single vehicle accelerated rapidly without the normal load, and was only stopped by a brake application long before it reached the terminus. It was a good many years before 84 m.p.h. was reached on a steam-worked railway in Ireland.

L.T.E. Underground "solid" bullseye sign, showing part of space for lower panel

Off the Peg

The railways have a great deal to do to clean themselves up and make themselves attractive, and then perhaps the advertisements . . . about "selling" the railways will come to pass. . . . In Ireland, where they have the same problem but of a much smaller nature, they do, in fact, sell the railways, because if they find they are uneconomic they hold an auction. A short time ago a gentleman from Burma bought some rails for £17,000, and they ended up the auction by selling the station-master's hat and uniform for three guineas.—*Lord Brocket in a House of Lords debate.*

The last steam locomotive built for the Netherlands Railways, now preserved in the Netherlands Railways Museum at Utrecht

"O.K. . . . O.K."

Exeunt romanticisms;
Cryptic transatlanticisms,
Which at one time seemed exotic,
Exercise a spell hypnotic.
But when this affects the nature
Of our railway nomenclature,
We should like it made quite clear
Where we are to go from here.
Take the latest pet, "commuter."
It's compact and, maybe, cuter;
Yet the crystal-clear, if older
Version, "season ticket holder"
Does, without embellishment,
State exactly what is meant.
When we've quite absorbed the shock
And eventually take stock,
Nine times out of ten we say:
"Well, it's turned out quite O.K.!"

A. B.

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

SOUTH AFRICA

Bursaries for Administrative Officers

Special training for administrative staff, with specific encouragement in the shape of bursaries if they are good enough, will in future be given to selected South African Railway officers under the auspices of the Railway Administration. The new courses are distinct from those which have been given for many years, first at the Kroonstad section of the Railway Training College and later at Esselen Park, near Kaalfontein. The training given at these centres covers such subjects as police duties, catering, operating, and shunting.

Now it has been decided to introduce a departmental development course for administrative officers at the training college, and bursaries are being offered for a special university course covering the B.Com. degree adapted to railway requirements.

Frozen Orange Juice by Rail

Railway refrigerator wagons are being used to take frozen orange juice in concentrated form from Nelspruit in the Lowveld to Johannesburg from where it is distributed to the rest of the country. The juice is loaded at a temperature of 37 deg. below freezing point and the refrigerator wagons are cooled before loading. The use of dry ice makes it possible to keep the temperature inside the wagon as low as necessary. The train which is scheduled to carry the orange juice does the journey from Nelspruit to Johannesburg in about 19 hr. It is estimated that from 20 to 25 wagon-loads of orange juice will have to be railed from Nelspruit to Johannesburg this season.

NORTHERN KOREA

New Wagon Works

A new wagon building and repair works of the Northern Korean Railways, built with Polish technical aid, was opened at Wunsan recently. Its annual capacity as to overhauling and repair work is reported to cover 180 coaches and 1,230 goods wagons, in addition to 270 locomotives. The output capacity of the new works as to new goods wagons is reported to total several thousand units.

WESTERN AUSTRALIA

Reopening of Closed Lines

The Government Railways is to reopen two closed country railway lines—the Burakin-Bonnie Rock and Lake Grace-Hyden lines—on a seasonal basis to handle grain and superphosphate, possibly for a trial period of three years. The Treasury will pay the Railways the cost of opening the lines up to an agreed figure and will also stand the operating losses (excluding fixed charges such as interest) or the equivalent of road subsidies which would be paid if the lines remained closed, whichever is the greater.

If local farmers wish, other freight as well as grain and superphosphate will be carried, but this will exclude freight normally carried by the railway road services throughout the whole of the year.

The decision to reopen the lines followed examination of the two areas and their problems by a Cabinet sub-committee. The cost of reopening the line will be £5,000, and complete rehabilitation some £675,700. Annual maintenance will be £21,840 and estimated revenue £14,870.

QUEENSLAND

Finance for Mount Isa Line

The Australian Government will find £20,000,000 from its own resources to help finance the reconstruction of the Mount Isa line. The remaining £10,000,000 will be provided by the Queensland Government over the next five years. A considerable section of the work should be well in progress early in the New Year and the Government will set a target date for the completion of the project.

BRAZIL

Electrification Programme

Two mercury vapour rectifiers are being acquired to complete the electrification of the Paranagua-Curityba section (68 miles) of the Parana-Santa Catarina Railway. The last section of the Santos-Jundiai Railway to be electrified, that from Paranapiacaba to Maua (14 miles) was inaugurated in October. Rede Mineira has installed a new sub-station at Betim, 17 miles from Belo Horizonte, to improve traffic over the electrified lines between Divinopolis and Belo Horizonte.

Re-equipment Programme

Rede Ferroviaria Federal (R.F.F.) five-year re-equipment programme, held up by a Parliamentary enquiry as reported in our January 2, 1959, issue, has now been approved and 30 diesel-electric locomotives, 120 railcars for short distance journeys, with accommodation for 64 passengers, and 200 passenger coaches are being ordered immediately against the unused balance of the $100 million Export-Import Bank loan.

The following additional material will be acquired between now and 1963: 360 diesel-electric locomotives; 328 passenger coaches, 67 for 5 ft. 3 in. gauge and 261 for metre-gauge tracks; 100 Brazilian-built inspection coaches, costing 1,200,000 crs. each; and 465,320 tons of rails and accessories at an estimated cost of 16,000 million crs., to reform 7,554 miles of lines.

Wheels and axles are to be standardised to economise maintenance costs, and compressed air brakes will be installed on all metre-gauge lines south of the Sao Francisco River, to permit through running of trains. The Central Brazil and Vitoria-Minas railways are already equipped and R.F.F. will deal in turn with Parana-Sta. Catarina, Noroeste, E.F. Goias, Leopoldina, Rede Mineira, and Teresa Cristina.

Aid for North-Eastern Railways

Special credits, totalling 1,220·8 million cruzeiros, have been authorised to promote economic development in North-east Brazil; 236·8 million are earmarked for improvements to railways serving the so-called dry lands. An additional 40,000,000 crs. is allotted to strengthen the E.F. Nazaré permanent way between Nazaré and Santo Antonio de Jesus, and purchase ore wagons to convey manganese and other minerals from the mines to the port of Sao Roque. Large numbers of surplus staff have been transferred from the railways of North-east Brazil to the Department of Posts & Telegraphs.

UNITED STATES

Burlington's New Mississippi Bridge

A 4½-mile relocation of the Chicago, Burlington & Quincy Chicago-Galesburg-Kansas City main line at Quincy, Illinois, is involving some costly bridging work. This is chiefly the bridge over the Mississippi River, to replace the existing bridge, which has been declared an obstacle to navigation.

The new main structure, 2,501 ft. long, will have a 300 ft. span across the navigation channel of the river, and will give a headway of 63 ft. above the water level. Another bridge, 716 ft. long, will be required across Quincy Bay, and a third, 296 ft. long, across State Air Route No. 7 (a highway).

More Fare Reductions

During the summer considerable reductions in return "coach" or second class return fares were made by the Chesapeake & Ohio and Norfolk & Western Railroads. On the former round trip tickets between principal stations southwards from Detroit and eastwards from Cincinnati and Louisville have been cut to 33⅓ per cent over the single fare, as compared with the previous 66⅔ per cent over. On the N. & W.R.R. all return "coach" fares are now between 21 and 33⅓ per cent lower than formerly.

Higher-Powered Diesel Units

Changes in fashion are taking place in the diesel-electric locomotive power now being delivered to American railways. The present demand is largely for turbo-supercharged units of 2,400 h.p., which are available from three different manufacturers; over 200 of these are now on order for various railways, one aim being to reduce the number of units required in multiple-unit assemblies for the heavier trains. The Union Pacific has 75 on order, the Santa Fe 69, and the Southern 48. Preference is now for the hood type of unit, rather than the previous streamlined body, with a single cab at one end only

and a low nose hood for better visibility. Units of this type are intended mainly for high-speed freight work.

WESTERN GERMANY

Road-Rail Wagon

The road-rail wagon shown in the accompanying illustration is one of 30 recently supplied to the German Federal Railway. Four hydraulic cylinders in the wagon body are jacked down to disengage tractor and trailer. On the road, a self-steering arrangement using three Roballo ball-bearing turntables enables the trailing bogie to follow the wheel tracks of the vehicle.

JUGOSLAVIA

Diesel Locomotive Deliveries

The first batch out of 20 heavy-duty diesel locomotives ordered by the Jugoslav Railways in the United States as a result of a long-term $5,000,000 credit obtained is due to arrive at Split, the Dalmatian central port, towards the middle of November. These locomotives are intended for the 199-mile Split-Oštarije section of the Zagreb–Split standard-gauge main line, a section which comprises numerous heavy gradients and severe curves and where working conditions are very hard particularly in winter. This section is at present being reinforced for axle loads of 18 *tonnes*.

German Federal Railway road-rail wagon, showing hydraulic cylinders in the wagon body

Knin, 63 miles to the north of Split, point of bifurcation of another main line for Zagreb (via western Bosnia) is to be the base station of the diesel locomotives.

A group of 10 Jugoslav railway engineers and technicians are at present undergoing training in the United States covering diesel working technique, while some 60 drivers and servicemen are obtaining instruction in diesel working and maintenance in Jugoslavia.

U.S.S.R.

Central Siberian Trunk Line

A 260-mile stretch of the Central Siberian trunk line, which runs about 130 miles south of the Trans-Siberian Railway, has been completed between the River Irtysh and the Ob. The trunk line, which will be 1,305 miles long, will run through Kazakhstan, Western Siberia and the Southern Urals.

Publications Received

Der Moderne Personenbahnhof (*The Modern Passenger Station*). By Dipl. Ing. F. Fakiner. Mainz and Heidelberg. Verlagsanstalt Hüthig & Dreyer. 62 pp. 8 in. x 5 in. Illustrated. Price DM. 4.80.—The first volume in this new series contained an excellent short account of the growth of railways in Germany. The succeeding ones are intended to cover railway operation and engineering in that country today. In this book under notice the author describes, chiefly with reference to the new Heidelberg station, how a changing outlook in architecture and improved constructional methods have produced designs for stations attractive in themselves and much better adapted to the traveller's needs than were older structures. Loudspeakers, train describers, the use of electric power to concentrate control of traffic, often in a single signalbox and improve the use of the approach lines, and other devices are combined in ways described by the author to make operation of the modern passenger station highly scientific. Signalling, although sufficiently referred to in this work, is to be treated in a separate volume.

British Standard for Investment Castings in Metal.—A new British Standard publication, B.S. 3146: Part 1: 1959, Carbon and Low-Alloy Steels, is part of a future series dealing with investment castings in metal. Further parts will deal with higher alloy steels and special temperature steels. Castings of the type specified in Part 1 are those where manufacture involves the investment of an expendable pattern by a refractory slurry; castings by the shell moulding process are thus excluded. Section One surveys general requirements and specifies the process of manufacture, the method of identification of the casting, the procedure for testing both mechanically and by destructive methods, and the arrangement necessary for repairing castings. Section Two provides specific requirements for 12 different types of casting, many of which are sub-divided into two or three grades. The chemical composition and mechanical properties of each type of casting are detailed. Copies, price 6s., may be obtained from the British Standards Institution, 2, Park Street, London, W.1.

Victor Compressed Air Equipment.—A publication issued by Victor Products (Wallsend) Limited describes the whole range of Victor compressed air equipment including aridifier and water traps, air hose couplers, and self-cleaning air filters. In the booklet there is a diagram showing how moisture- and dirt-laden air is cleaned by centrifugal action in passing through an aridifier. A pipework arrangement diagram shows how the normal accumulation of water in an air pipeline system is automatically conveyed and discharged by the water trap. Capacities and dimensions are listed in separate tables. The booklet includes useful notes on the correct positioning of the equipment and the results to be expected. The section describing Victor air-hose couplers shows the action of the rubber seal which is free during coupling and becomes effective only as air pressure is applied. A sectional view of a simple and robust self-cleaning air filter shows how a momentary quarter turn on the control handle reverses the air flow and ejects all dirt and scale collected in the filter direct to atmosphere. Copies may be obtained from Victor Products (Wallsend) Limited, Wallsend-on-Tyne.

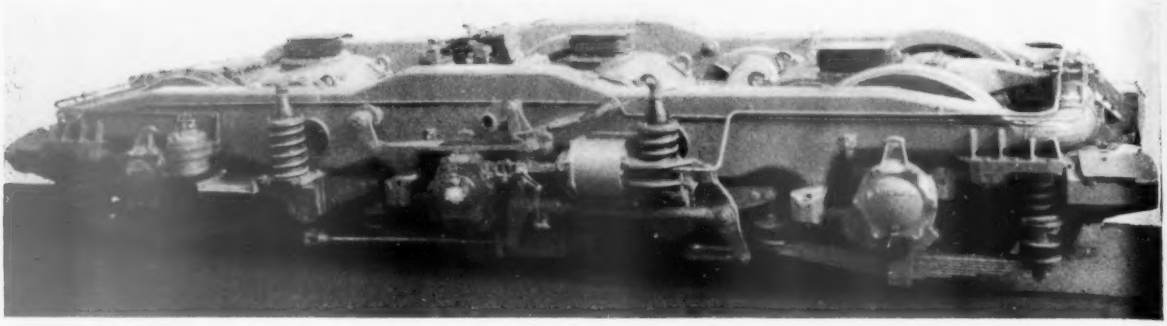
Morganite Brush Holders.—Morgan Components Limited, the new name by which the Synthetic Carbon & Engineering Co. Ltd. will be known, has issued a leaflet introducing the enlarged range of Morganite brush holders now manufactured at Stanmore. All existing brush holder designs of the Morgan Crucible Co. Ltd. and the former Synthetic Carbon & Engineering Co. Ltd. are included in the complete range of which only typical examples are illustrated. The leaflet stresses the accuracy with which parts are made from extruded brass sections, gravity or pressure die castings, or sand castings according to type. The illustrations include a cast holder made to a customer's specification for rail traction machines and one suitable for 8 deg. trailing brushes in tandem for heavy industrial machines. Requests for copies or additional information should be addressed to Morgan Components Limited, Cumberland Road, Stanmore, Middlesex.

XUM

Friction Damping

The effect of friction on vehicle oscillations

By J. L. Koffman



Alsthom bogie for Co-Co electric locomotives. Laminated springs used between axlebox and frame simplify frame layout. reduce frame stresses and supply damping forces

THE riding qualities of rail vehicles in the vertical plane require a controlled constancy over their entire life if the ride is not to deteriorate with time. This means not only that the damping characteristics should be maintained as originally specified but also that the designer should be able to ensure the necessary damping qualities to begin with. Consequently, in an ideal state of affairs, all suspension components should have no uncontrolled friction at all and the damping should be ensured by extraneous devices specially incorporated for this purpose.

In practice, a certain amount of friction or deformation losses are unavoidable. These occur between horn guides and axleboxes, at the point of attachment of links or radius arms used between axleboxes and frame, at the bolster check plates, and with various forms of vertical axlebox guides. Even when helical springs are used for primary and secondary suspension, well-lubricated cylindrical axlebox guides and link attachments between bolster and frame, the damping factor D is scarcely less than 0·05 of the critical value.

Inconsistent Spring Damping

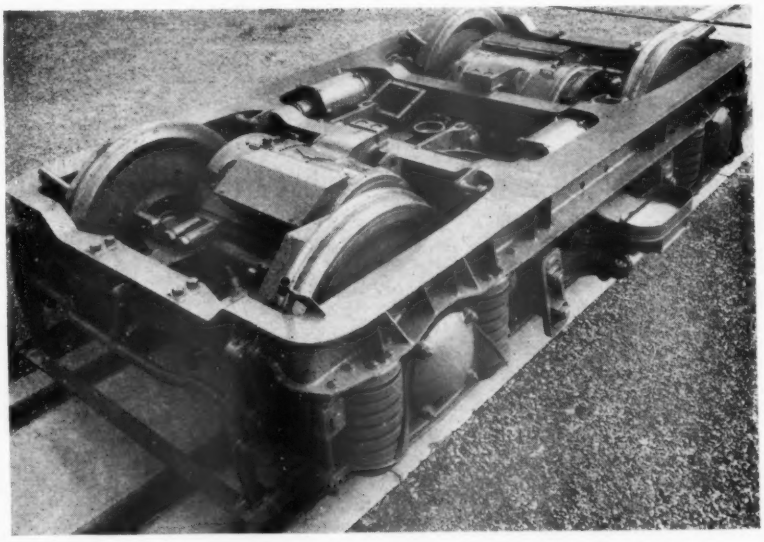
When laminated springs are used for primary and secondary suspension the friction losses in certain circumstances can result in excessive damping (D=0·5) which also, and for rather obvious reasons, can vary within fairly wide limits with mileage. This results in somewhat unpredictable riding qualities. Because of this, laminated springs occasionally have been referred to as anachronisms and suggestions have been made as to their replacement by helical springs (no friction) and hydraulic dampers (controlled damping).

That such suggestions do not necessarily ensure the universal solution they purport to provide and may even create more difficulties than they hope to prevent, results from insufficient appreciation of the fact that in many instances the use of laminated springs is eminently suitable to ensure an all-round satisfactory design. Examples are provided by the Alsthom and S.L.M. Companies, both of which use laminated springs for primary and secondary suspensions respectively. The use of these springs with both primary and secondary suspensions of the Italian (F.S.) class "424" Bo-Bo electric locomotives has also resulted in excellent riding qualities. Suitably proportioned and maintained, laminated springs have a very useful role to play, particularly when suitably blended in the overall bogie design where they can be instrumental in reducing frame-bending stresses.

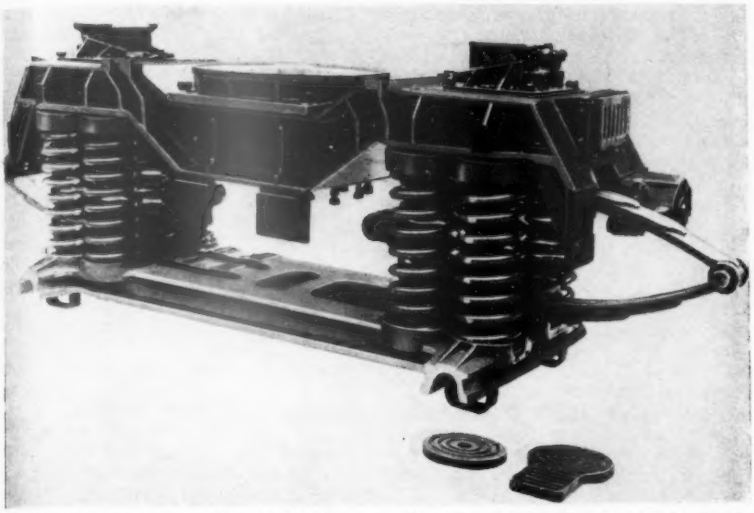
It might also be mentioned that the very nature of friction losses will cause damping to be proportional to load. That friction damping is quite capable of ensuring the required characteristics is indicated in the second illustration which shows the use of friction dampers across the helical primary springs of a recent electric railcar power bogie of the Loetschberg (B.L.S.) Railway. In Holland and Italy laminated springs are used as dampers mounted in parallel with secondary and primary helical springs respectively.

With the S.I.G. bogie, damping of the secondary torsion bar springs is achieved by well-adjusted and maintained friction resulting from the action of the bars in their guides. In the case of the Allan bogie (also illustrated) secondary suspension torsion bars are assembled from leaves and use also is made of the interleaf friction to provide the necessary damping.

Particularly with primary springs hydraulic dampers have not proved to be an



S.I.G. bogie for powerful electric railcar. Auxiliary friction dampers are used with helical axlebox springs. Friction damping is relied on with torsion-bar bolster springs



Bolster spring assembly of Werkspoor electric railcar bogie, Netherlands Railways. The small fully-elliptic springs are used as friction dampers

unmixed blessing. Apart from the difficulty of ensuring relatively high magnitudes of damping factors at the small displacements faced with at this point, their performance suffered, as stresses imposed are high. By the very nature of their action, dampers are required to transmit forces, i.e., they act as a coupling between wheels and bogie frame and are thus subjected to appreciable punishment as a result of the high wheel accelerations caused by rail joints, track elasticity, rail corrugation, wheel eccentricity, and flat spots. Compared with the gentler life of relatively slow oscillations encountered between tyre sprung axles and bodies of road vehicles, these conditions can effectively increase damper wear and maintenance expenses.

The action of friction (Coulomb) and hydraulic (viscous) damping is illustrated in Fig. 1 with the aid of force-displacement diagrams. In Fig. 1(a), spring and damping force are plotted as function of displacement with the body released from an initial displacement of $\frac{1}{2}$ in. at point 1. As the ordinate scale is in units of force relative to spring stiffness, the diagram will be valid for any case where friction force in lb. is 0·1 of spring stiffness in lb. per in. The dotted resultant force line determines acceleration of oscillating mass. The area under the resultant force line defines work done and, as the mass starts from rest and momentarily comes to rest after each half cycle, the positive work of acceleration must be equal to the negative work of retardation, as indicated by the shaded areas above and below the base-line. The identical condition must be met on the return motion so that at the end of one cycle the mass has to come to rest at a displacement of 0·1 in. (points 4-5) or at a reduction in amplitude of 0·4 in. equal to four times the given ratio of friction to spring rate. Since at 4 the spring and friction forces are equal, the restoring force will be zero, so that the oscillation comes to rest within one cycle.

Diagram for Viscous Damping

A similar diagram is plotted in Fig. 1(b) for viscous damping. Here, the damping force is variable and the resultant force curve also meets the condition that work done during acceleration is equal to that done during retardation. However, the resultant force at extreme displacement (point 1) is necessarily identical with spring restoring force, for here damping force falls to zero at zero velocity.

The superimposed curves (Fig. 1(c)) show that maximum acceleration at the beginning of the cycle is lower with Coulomb damping, while rate of change is constant. Initial acceleration and its maximum rate of change are greater with viscous damping, while maximum retarding force acting on mass occurs at a point short of maximum displacement. This is an important characteristic of viscous damping, the force out of phase with the displacement being the reason why resultant force rather than displacement amplitude is of significance

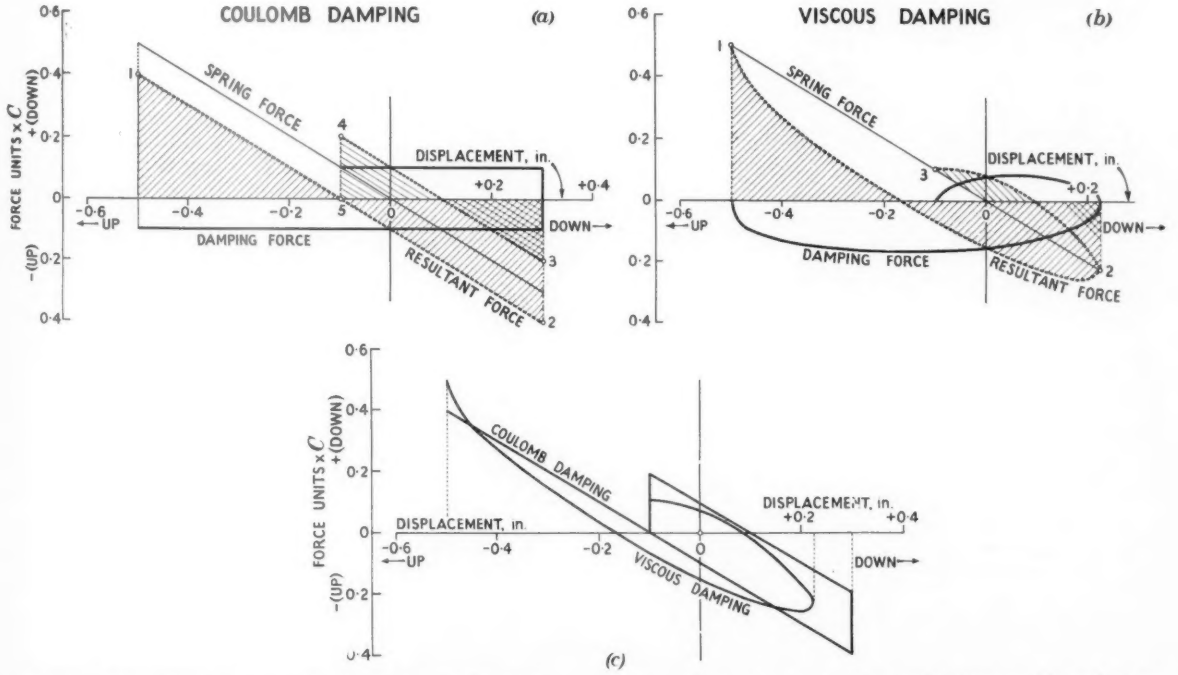


Fig. 1—Force-displacement characteristics of frictionless springs oscillating in conjunction with friction (a) and viscous hydraulic dampers (b)

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here. At resonance the reduction of amplitude per cycle with friction damping must be at least as great as the amplitude induced by each single impulse. Otherwise amplitudes will increase at each successive cycle, theoretically without limit(1). This is obviously not the case with viscous damping (2).

With ideal or Coulomb friction, damping force remains constant, but changes its value at stroke reversal and at the end of each cycle (Fig. 2). The amplitude of oscillation is reduced by the constant magnitude

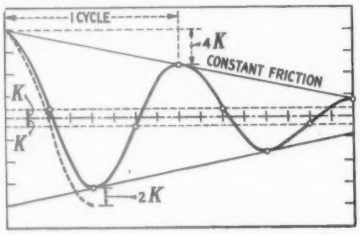


Fig. 2—Oscillation decay resulting from ideal (Coulomb) friction damping

$$\triangle a = 4K/c \quad \text{(ft.)}$$

where K (lb.) is the constant force opposing the motion and c (lb. per ft.) the spring stiffness, so that $\triangle a$ is equivalent to four times the static deflection caused by the friction force imposed on the springs, regardless of oscillating mass or of magnitude of displacement. As the successive amplitudes are decreasing in accordance with an arithmetic regression, the points of maximum amplitudes are connected by a straight line.

To facilitate the mathematical treatment of oscillations subjected to friction damping and determination of amplitude in the vicinity of resonance, the pattern of decay is likened to that caused by hydraulic damping (2) with the aid of the equivalent damping constant or resistance p_f where

$$p_f = 4K/\pi\,\omega_f x$$

Here ω_f (radians per sec.) is the frequency of excitation and x (ft.) the displacement. This value of p_f is obtained by considering the amount of work done by the hydraulic damper during each oscillation and dissipated as heat, being equal to that done by the friction damper (1), i.e.,

$$p_f \pi\,\omega_f x^2 = 4Kx$$

By introducing the value of p_f into the equation for the damping factor D (2) for bouncing oscillations

$$D_1 = 2K/\pi\,\omega_f x m\,\omega_1$$

where m (lb./sec.^{2} per ft.) is the mass of the oscillating body and ω_1 the bouncing frequency. Similarly, for pitching,

$$D_2 = 2a^2K/\pi\,\omega_f x I\,\omega_2$$

where ω_2 is the natural frequency of the suspension in pitching. It will be noted that, while the damping factor ensured by viscous damping remains constant (2), that resulting from friction will depend on displacement x and frequency of excitation ω_f.

The application of equation for D_1 and D_2 will be considered for bolster damping a 62-ft. long diesel locomotive body weighing 68 tons and supported on bogies 33·75 ft. apart, the static deflection of the springs being 3·53 in. Consequently, spring stiffness is 515,000 lb. per ft., mass 4,750 lb. sec.^{2} per ft. and moment of inertia about the lateral axis (2) through the centre of gravity $I_y = 4{,}750 \times (0{\cdot}22 \times 62)^2 = 88{,}000$ (ft. lb. sec.^{2}). Circular frequencies of bouncing and pitching oscillations are $\omega_1 = 10{\cdot}5$ and $\omega_2 = 8{\cdot}1$ rad. per sec. respectively. Damping is achieved with the aid of eight friction dampers, four per bogie, provided with steel on steel rubbing plates subjected to a spring-maintained pressure of about 3,000 lb. For the low velocities considered here the coefficient of friction for dry steel can be taken as 0·55, so that $K = 8 \times 3{,}000 \times 0{\cdot}55 = 13{,}200$ lb. From Fig. 4 of ref. 3, amplitude of displacements will be about $x = \pm 0{\cdot}56$ in. or $\pm 0{\cdot}046$ ft., so that for resonance conditions when $\omega_f = \omega_1$ or $\omega_f = \omega_2$.

$$D_2 = 2 \times 13{,}200/\pi \times 10{\cdot}5 \times 0{\cdot}046 \times 4{,}750 \times 10{\cdot}5 = 0{\cdot}35$$

and $D_2 = 2 \times 285 \times 13{,}200/\pi \times 8{\cdot}1 \times 0{\cdot}046 \times 2{,}200{,}000 \times 8{\cdot}1 = 0{\cdot}363$.

Although high, both values are acceptable, particularly when considering that the coefficient of friction might be reduced in service. On the other hand, the value of D will vary with the frequency of excitation and displacement, both of which will vary with speed.

As mentioned previously, a serious limitation of Coulomb damping is that it will not restrict the amplitude of resonant vibration unless friction force is greater than $(\pi/4)P_m$, where P_m is the maximum value of the excitation force. This will be appreciated from the fact that work per quarter cycle resulting from a harmonic force at resonance equals $(\pi/4)P_m x$, whereas work done by a constant friction force K equals Kx. Consequently, if $K < (\pi/4)P_m$, amplitudes will be increased on successive cycles, theoretically to infinity. Because of this, Coulomb damping is not applicable to a system subject to steady-state oscillations at resonance, unless maximum value of the exciting force is definitely limited to a known level.

The comparison of the effect of both types of damping on steady-state forced vibrations will be made for excitation forces proportional to the square of the frequency, i.e., $P = P_m r^2$, where $r = \omega_1/\omega_f$ or ω_2/ω_f is the frequency ratio. This dependence of P on r^2 applies to vehicles running over equally-spaced irregularities at variable speeds. Coulomb damping friction is assumed so that $K = P_m$, while for viscous damping it is assumed that $D = 0{\cdot}2$ to $0{\cdot}3$. This ensures substantially the same maximum force transmissibility as the specified Coulomb damping at resonance.

The force-transmission (A.T.) characteristics for both types of damping are plotted in Fig. 3a. It will be noted that, at up to $r = 1{\cdot}2$, friction damping ensures the lowest force transmission. Above about $r > 1{\cdot}4$, viscous damping with $D = 0{\cdot}2$ and $0{\cdot}3$ shows better results, but at $r > 2{\cdot}5$ transmitted forces for $D = 0{\cdot}3$ are higher than with friction damping. With Coulomb force maintained at the required level, maximum force transmission is substantially the same as with viscous damping near resonance, but falls thereafter to approach a force transmission (A.T.) of $2P_m$ as a limit. Thus, at high frequency ratios, Coulomb damping adds to the force transmission only by the amount of the constant friction force.

When $K = P_m$, friction force will exceed

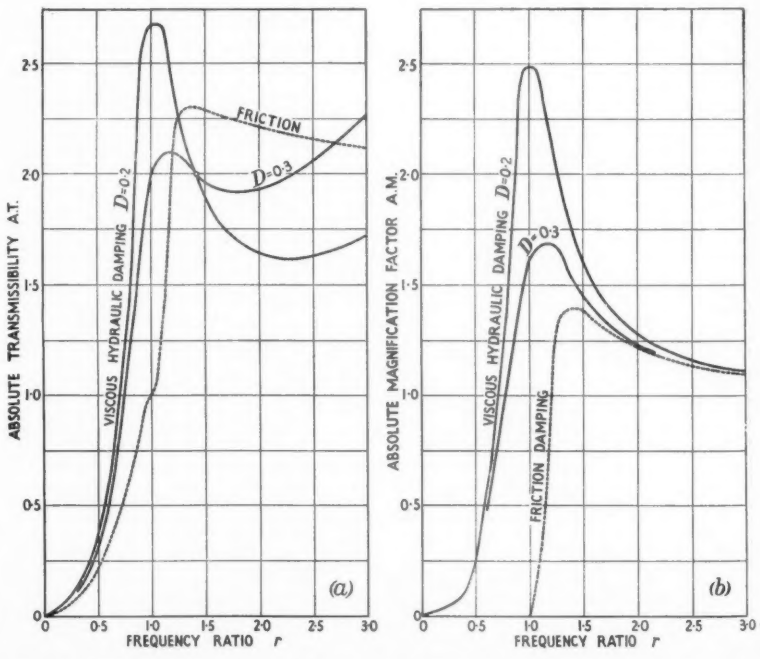
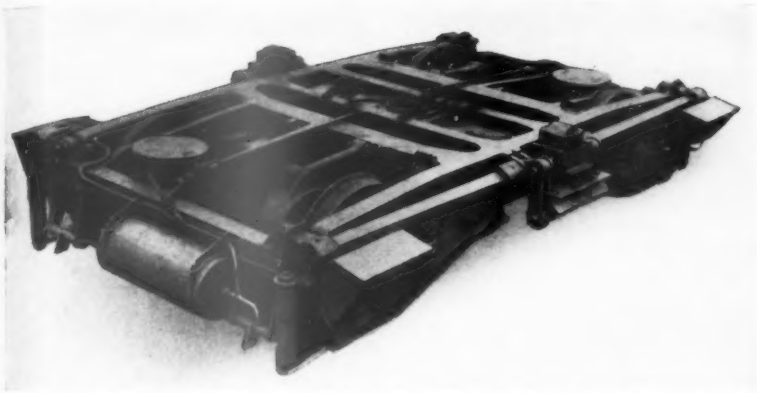


Fig. 3—Effect of friction and hydraulic damping on force transmission and oscillation amplitude ratio as a function of frequency ratio



Allan bogie for Portuguese diesel-electric railcars. The torsion bars are made up from individual leaves and damping force is provided by interleaf friction

the maximum value of the excitation force at all frequency ratios less than 1. Therefore, no motion of the oscillating mass is induced Fig. 3(a) and excitation force is transmitted directly through the friction damper. As already stated, force transmission at $0 < r < 1{\cdot}2$ is less than with hydraulic dampers because with the latter the induced oscillations introduce spring deflection forces which augment the resultant force transmission.

The comparative displacement amplitudes of a steady-state vibration are shown in Fig. 3(b). Here, the ordinate scale is expressed in amplitude ratios with respect to static deflection P_m/c corresponding to maximum excitation force P_m at resonance. At $r > 3$ there is practically no difference in displacement amplitudes, while at resonance the amplitude maintained by Coulomb damping is less than with hydraulic dampers. Damping friction must exceed maximum excitation force at resonance $\pi/4$ times to keep the amplitudes from going out of control.

Advantages of Friction Damping

Thus, at resonance conditions, Coulomb damping can be of advantage only if the magnitude of maximum excitation force is known, while viscous dampers are to be preferred when resonance control is required in the face of excitation forces of unknown magnitude. Or, to put it differently, friction damping can be effective if the excitation frequencies encountered in service will not be near or at the natural frequency of the vehicle oscillation concerned.

It follows that friction damping can be used with advantage under certain conditions provided its magnitude can be pre-determined and maintained in service. Results of investigations relating to heavy road vehicles suggest that, to achieve damping properties resembling $D = 0{\cdot}25$, it is necessary with leaf springs to meet the relation

$$(H/L)f = 0{\cdot}3 \text{ to } 0{\cdot}35$$

where H (in.) is the height of the assembly, L (in.) its effective length, and f (in.) the static deflection. Thus, for a static deflection of 3 in., $H/L = 0{\cdot}1$ to $0{\cdot}16$. This ratio gives an indication of the desired leaf thickness and required width. Generally a value of $H/L = 0{\cdot}1$ should be aimed at.

As far as leaf springs are concerned, attention must be drawn to a pecularity in their characteristic resulting in a variable stiffness. If a leaf spring is subjected to a gradually-increasing load, the load-deflection characteristic will be represented by a straight line O-A (Fig. 4.) If the load is gradually reduced the spring will not move until the load is reduced from the value of A to that at B. With further load reduction the deflection will be reduced accordingly along the line B-O. The hysteresis losses resulting from friction are indicated by the loop O-A-B-O. Mean spring characteristics are represented by the line O-C. If now the spring is subjected to the nominal load P and then to further oscillating loads $\pm\triangle P$, hysteresis loops resulting from friction losses will be such that resultant mean characteristic will indicate the spring to be progressively stiffer the smaller the values of $\triangle P$ (4).

References

1. Den Hartog, "Mechanical Vibrations," McGraw-Hill Book Company, New York.
   van Bommell, P. "An Oscillating System with a single mass with dry friction damping subjected to harmonic vibrations." *Bulletin*, International Railway Congress Association, January, 1958.
2. Koffman, J. L., "Vibrational Aspects of Bogie Design," *Journal*, Institution of Locomotive Engineers, 1957, No. 260.
3. Koffman, J. L., "Spring Stresses and Deflection," *The Railway Gazette*, January 30, 1959.
4. Borgeaud, G., "Mechanische Probleme am mech. Teil moderner elektrischer Lokomotiven," Masch. bau und Wärmewirtschaft, Vol. 11 (1956) Nr. 10/11.

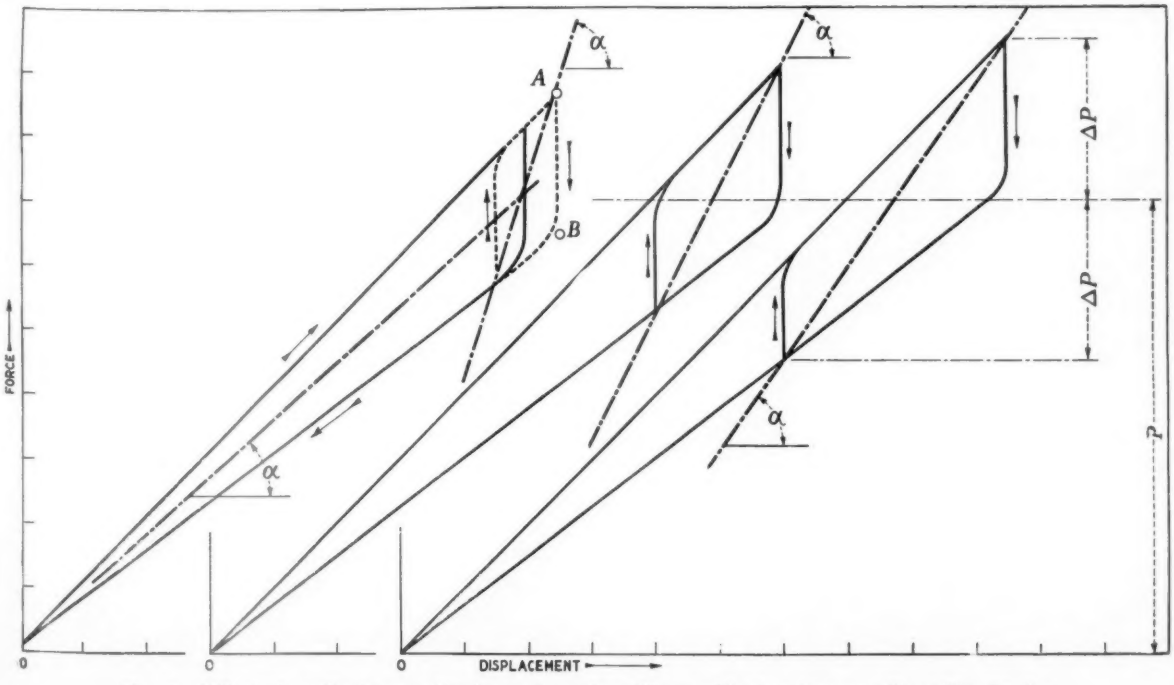


Fig. 4—Effect of oscillation amplitude on dynamic stiffness of leaf springs as affected by friction

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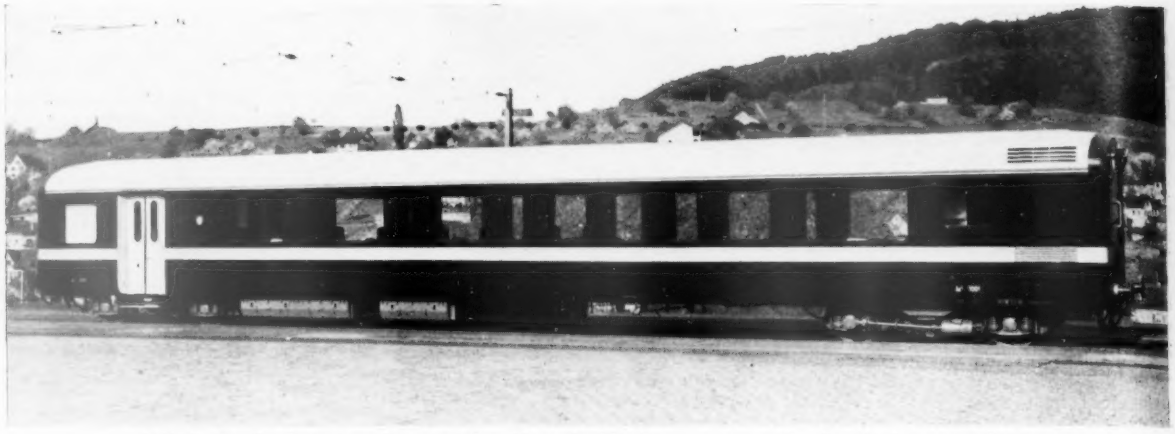
Standard-Gauge Saloons for the Swiss Federal Railways

All-steel standard-gauge vehicles available for hire by public



S.F.R. standard-gauge saloon coach. Note double doors at one end only, cloakrooms adjoining

STANDARD - GAUGE saloons, of which two are now running, have been built by the Schweizerische Industrie Gesellschaft (S.I.G.) of Neuhausen (Rheinfall) for the Swiss Federal Railways. The first was constructed specially quickly for use by the President of the Confederation, or visiting heads of States. Such vehicles are not often required for these purposes in Switzerland. They are made available for hire by the public at a minimum charge of 20 first class tickets, plus a fixed charge.

The external appearance of the new coaches, which have a length of 77 ft. 9 in. and a tare of 34 *tonnes*, is not very different from that of the ordinary lightweight stock. The bodies are all-steel welded, carried on Z-longitudinals, with simple cross stiffeners. Entry is by double doors at one end only, giving access to a vestibule with two cloakrooms which can be shut off by imitation leather curtains and where hats, coats, and luggage can be deposited. Alongside are two lavatory compartments. The vestibule leads into the saloon, which extends up to the service compartment and can be divided by a curtain if desired. The walls are in light-coloured maple. The six windows on each side are each 5 ft. 11 in. long. The floor is covered by a blue carpet and the 36 armchairs and 12 small tables are covered and finished in bright colours.

The individual tables can be assembled to form one long table down the centre of the saloon, at which six persons can sit on each side and one at each end, making a very convenient conference room. Indirect lighting is fluorescent.

Air Conditioning

The air conditioning equipment is by Sulzer and Brown Boveri and the only installation of its kind in Switzerland. The air is drawn in through filters and passed over heaters or combined with the action of refrigerating units, as occasion requires, and passed into the saloon itself through openings in the ceiling. The refrigerating machinery and automatic controls, which incorporate electronic apparatus, occupy a cubicle at the end of the vehicle remote from the doors; next to this is the kitchen, with pantry, scullery, and a small bar.

Attention has been devoted to the elimination of noise. Cork insulation is used for the floor while the sides and roof are treated with flax covering. Comfortable riding has resulted.

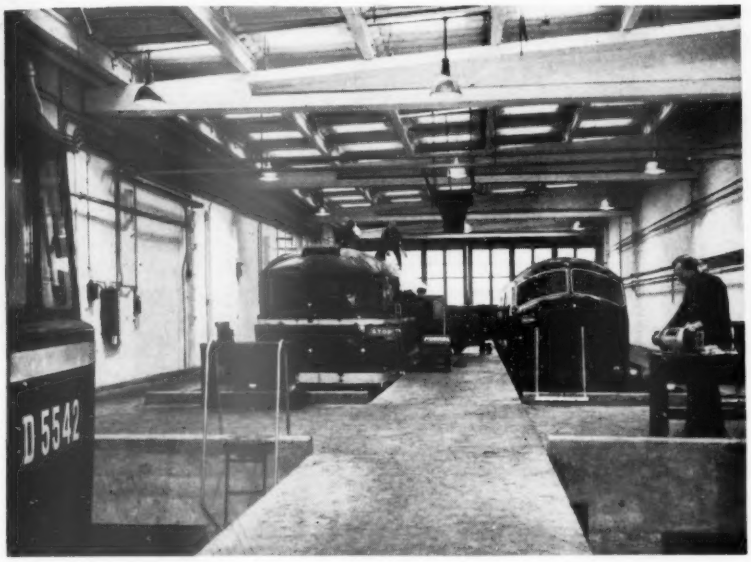
Shortly before the last war the Swiss Federal Railways put into service a special observation saloon on the metre-gauge Brünig line. This had a light-alloy body extending each side of a central entrance vestibule, and other features similar to those in the vehicles described above.

Normal interior arrangement. Bright colours are used for furniture

Tables assembled for conference. Kitchen and refrigeration machinery are at far end

Modernisation of Ipswich Motive Power Depot

First complete conversion of a British Railways passenger and freight steam motive power depot to service and maintain diesel locomotives



View from high-level service platform showing arrangement of four individual repair bays in maintenance shop

DIESEL locomotive working based on the newly converted Ipswich Motive Power Depot on the Great Eastern Line of British Railways, Eastern Region, covers passenger and freight train services between Yarmouth, Lowestoft, Ipswich, and London, cross-country services between Ipswich and Whitemoor, and local services. As recorded briefly in our November 6 issue, Ipswich is the first main-line motive power depot in the country to be converted completely from steam to diesel working for both passenger and freight services under the modernisation plan.

Twenty-seven main-line diesel-electric Type "2" locomotives allocated to the depot replace 60 steam locomotives. These are Derby- and Crewe-built 1,160-h.p. units with Sulzer 6LDA28 engines, Brush 1,250- and 1,365-h.p. with Mirrlees JVS12 engines, and North British with NBL/MAN L12V18/21S engines. More diesel main-line locomotives may be allocated to the depot later.

Between 20 and 30 diesel shunting locomotives of Drewry Car Co. Ltd., and Hunslet Engine Co. Ltd. makes are also maintained at Ipswich. With the exception of three 153-h.p. Hunslet units, power for the shunting locomotives of both makes is by the Gardner 8L3 204-h.p. engine.

Staff Training

The changeover from steam has necessitated over 200 drivers attending basic diesel courses and undergoing normal conversion to diesel driving. The training of maintenance staff in their new duties has been aided by special courses at locomotive builders' works. The maintenance staff at present numbers over 80, including 19 grade-1 fitters and seven electrical fitters, the remainder being mainly coppersmiths, welders, fitters' mates and general labourers.

The main building consists of a four-road running shed for daily inspection and servicing work, flanked by a maintenance shop with two tracks made into four repair berths and on the outer (west) side of which is the fitting shop.

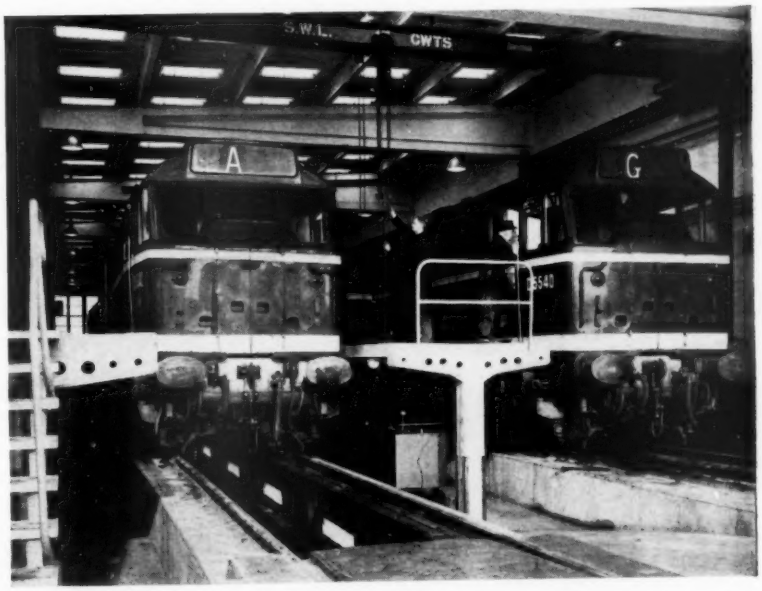
Nearby is a large and modern administrative block which was completed in 1954 and described and illustrated in our issues of April 9 and July 23, 1954, respectively. This provides excellent washing facilities and private lockers for all maintenance staff and crew men.

Preparatory Work

The major part of the depot was reconstructed also in 1954 with the requirements of diesel traction in mind, which greatly facilitated the subsequent conversion to diesel maintenance. An unusual feature of the new building was the form of pre-stressed concrete running-shed roof-members from each of which a cantilever portion spanned the maintenance bay before additional support was available from the more recent fitting shop partition.

Smoke Chutes Removed

One of the most important of the recent civil engineering tasks was the removal of smoke chutes and flues and general cleaning to remove the grime deposits left by steam locomotives. Inspection pits and the shallower side pits were modified to suit the new requirements and flanked by service platforms of concrete, 4 ft. 6 in. above rail level. A common centre portion joining the six platform-ends forms a bridge-head and ramp leading through the partition and into the fitting shop. Thus wheeled trucks can run from the high-level platforms directly into the fitting shop to distribute and collect engine



Interior view of maintenance shop showing the neat form of support for service platforms and the illuminated inspection pits

parts, filter panels, and so on.

A 15-cwt. hand-operated travelling crane, manufactured by Felco Hoists Limited, covers all the normal lifting requirements of two repair bays at the south end of the shop.

Examination Schedules

Four main-line locomotives, one in each repair bay, or three main-line and two shunting locomotives, can be accommodated in the maintenance shop. There are carried out the weekly, monthly, and three - monthly examinations. Of the plant and equipment installed to facilitate this work, the most elaborate is the Wakefield Lubrequipment for storing and dispensing lubricating oils and for the removal of used sump oil. Other installations include fluorescent lighting flush-mounted in the pit walls and plant for mixing, storing, and dispensing chromate-treated engine coolant. The hot-water radiator space-heating system installed in 1954 with coke-fired boiler has been retained. In addition a Cimex Frazer Tewson electric floor scrubber will be in operation in the near future.

Trenches between tracks in the running shed enclose the pipe runs for chromate-treated water, soft water for train-heating boilers, lubricating in S.A.E. viscosity grades 30 and 40, and fuel oil. The pump house and store for lubricating oil adjoins the administrative block, whereas the fuel oil is fed from three 25,000-gal. vertical cylindrical storage tanks at the north end of the depot close to the main line.

Fixed Plant

An Intermit filter-cleaning plant in the fitting shop includes an electrically-driven conveyor feeding panel-type air filters through the combined water rinse, hot detergent spray, and second rinse stages. The centrifugal spin drier also removes surplus oil from filters which have been re-oiled. Other plant in the fitting shop includes a Laycock Air Speed pressure cleansing tank with hand holes and a Perspex cover for viewing the parts being cleaned. Individual tool lockers of steel, and additional wash-basins are provided in the fitting shop. Offices for the mechanical foreman, chargehands, and records clerk are against the outer wall. Component de-greasing and battery charging facilities are also provided.

The north end of the fitting shop bay incorporates limited machining facilities and a clean room annexe where an Hartridge injector tester and a nozzle-cleaning cabinet are provided.

With the elimination of steam working, the redundant coaling plant, turntable, and water columns will be removed. On part of the site occupied by these, a locomotive washing machine will be erected. Design work on this is in hand.

Reinforced concrete work has been carried out by Kyle Stewart Limited, Wembley, under the direction of Mr. A. K. Terris, Chief Civil Engineer, Eastern Region, and the lubricating oil installation by Wakefield-Dick Industrial Oils Limited. With the exception of these and the locomotive washing machine, all the work involved has been carried out by railway engineering staff.

Opening-Roof Wagons

Swiss design to give access to full floor area

TO meet general traffic and handling requirements laid down by the Swiss Federal Railways, a wagon with opening roof plus two light-alloy hinged side doors has been developed by Schindler Wagons S.A., of Pratteln, and one or two prototypes are now running. The main features are that the whole roof area can be laid open at once, or closed up, by two men at ground level; and that the roof structure when open is still within the confines of the U.I.C. loading gauge, though shunting movements with the roof open are not permitted.

The wagons now running are of a nominal capacity of 20 tons on a tare of 12 tons; they have a wheelbase of 17 ft. 9 in., and underframe length of 31 ft., a maximum width of 9 ft. 10¼ in., a roof height (shut) of 11 ft. 4 in., and a floor loading area of 260 sq. ft. The first prototype was a conversion, with a new roof added to an existing wooden body, but subsequently steel-bodied wagons, as shown in the illustration, have been built.

Roof Construction

In two halves, the roof is of light-alloy sheets and sections, of combined welded and riveted construction. The two halves come together along the top centre line with a fully waterproof joint, gained by overlapping special sections. The roof halves also overlap the end walls of the wagon. For strength the roof is double, of inner and outer 1·5-mm. sheets with 1-mm. anti-corrodal corrugated plates between as separators and stiffeners. Opening and closing of the roof halves is by a balanced lever system, operated from the two ends of the wagon simultaneously, and with a dash-pot arrangement at each end to control the opening and closing movements. The end walls of the wagon, to which the roof pivots are fixed, are also of light alloy. Opening is in three stages: unlocking, withdrawal of bolts or pins, and lowering. In closing, these operations occur in reverse order. The bolting prevents unintentional operation and maintains tight closure of the roof during wagon movement. Each moving half of the roof weighs about 765 lb., and the two halves are easily opened together or separately by two men working in conjunction.

Schindler opening-roof 20-ton wagon, Swiss Federal Railways

CONVERSION OF FREIGHT DEPOTS TO PUBLIC DELIVERY SIDINGS.—British Railways, North Eastern Region, has announced that, because of the loss which is being incurred, the freight depots at Redmire, Aysgarth, and Askrigg, on the Northallerton-Hawes line will be converted to public delivery sidings on November 23, 1959. Because of the urgent need to effect immediate economies in the general public interest, and having regard to the alternative facilities which are available, the Transport Users' Consultative Committee for the North Eastern Area has agreed that these stations should be converted. There will be no change in the existing arrangements for the collection and delivery of parcels and freight traffic requiring cartage. Full wagon loads not requiring to be collected or delivered by British Railways cartage services will be dealt with at the public delivery sidings.

RAILWAY NEWS SECTION

PERSONAL

Mr. K. C. Lall, who has been Director of Standardisation in the Ministry of Railways, India, has been appointed General Manager of the Chittaranjan Locomotive Works. Mr. Lall succeeds Mr. K. Ramachandran, who is retiring in the near future.

Mr. Arthur J. White, Assistant General Manager, Eastern Region, British Railways is retiring for health reasons this month, at the age of 61. He will continue to assist the region, in an advisory capacity, in connection with large reconstruction projects and it is understood that for the time being, at least, he will be engaged primarily on the re-planning of Kings Cross. Mr. White was educated at Bedford Modern School and joined the Great Northern Railway at Peterborough in 1913. During the 1914-18 war, he served with the Artists' Rifles, and was commissioned in the Northamptonshire Regiment. When the Traffic Apprenticeships Scheme was inaugurated in the Southern Area of the L.N.E.R., in 1923, Mr. White secured the first place by examination and, after periods of training in the commercial, operating and locomotive running departments, he held a succession of positions in the Eastern Counties, at Edinburgh, and at York. In 1929, he entered the Chief General Manager's Office as Assistant to the Industrial Agent, and, in 1933, was appointed Commercial Advertising Agent to the L.N.E.R. From 1940, he was closely associated with the formation of Home Guard units and later commanded the 17th City of London Battalion, H.G. He became Chief of Police, Southern Area, L.N.E.R., in 1943; Advertising Manager, L.N.E.R., in 1945, and Advertising Officer to the Railway Executive in 1948. Mr. White was transferred to Liverpool Street as Assistant Chief Regional Officer, Eastern Region, in October of that year. He became Assistant Chief Regional Manager, Eastern Region, in December, 1954, and later, was re-designated Assistant General Manager.

Mr. Arthur J. White
Assistant General Manager, Eastern Region, who is retiring

Mr. A. A. A. Cardani
Appointed Signal Engineer of the Western Region

Mr. J. D. R. T. Tilney, has been appointed Parliamentary Private Secretary to the Minister of Transport.

Mr. J. W. H. Townshend has been appointed Executive Assistant to the European General Manager, Canadian Pacific Railway. This is a newly-created position in the reorganisation of the company's European administration.

Mr. J. Hancock, Commercial Superintendent in the office of the Line Traffic Manager (Great Northern), Kings Cross, Eastern Region, British Railways, has been appointed Commercial Officer (Traffic Headquarters), Liverpool Street, Eastern Region, in succession to the late Mr. F. G. Crabb.

Mr. Geoffrey Wilson, Member of Parliament for Truro, has been elected Chairman of the Conservative Party Transport Committee. Mr. Nigel Fisher, Surbiton, becomes Vice-President; Mr. Grant-Ferris, Nantwich, and Mr. Gresham Cooke, Twickenham, have been elected Secretaries.

Mr. R. B. Temple, Traffic Manager, Sheffield, Eastern Region, British Railways, will retire on December 31. He will be succeeded by Mr. E. R. Williams, District Commercial Officer, Sheffield.

Mr. A. A. A. Cardani, B.Sc., A.M.I.E.E., M.I.R.S.E., Assistant Signal Engineer, Western Region, British Railways, who, as recorded in our October 16 issue, has been appointed Signal Engineer, was educated at Salesian College, London. He studied Electrical Engineering for Graduateship of the Institution of Electrical Engineers at the West Ham Municipal College, also reading Physics and gaining Honours in the London University B.Sc. (Special) degree. Mr. Cardani joined the Signal & Telegraph Department, Southern Area, London & North Eastern Railway, in 1938. After an apprenticeship in all branches, he was appointed to the Drawing Office in 1943, subsequently becoming an engineering graduate. He principally was engaged on stage work for the Great Eastern electrification up to 1947, in which year he joined the Great Western Railway. Mr. Cardani was engaged on new works, including signalling for the railway alterations for the Margam Strip Mill Scheme in South Wales, and the introduction of multiple aspect signalling between Paddington and Southall. In 1955, he was appointed Assistant to Signal Engineer (General). He was appointed Assistant Signal Engineer in 1957. He has served on a number of signalling committees of the B.T.C., including the Electrical Signalling Apparatus Sub-Committee of the Signal & Telecommuni-

Mr. J. K. Lord
Appointed Electric Traction Engineer, Liverpool, L.M. Region

Mr. J. Powell
Appointed District Traffic Superintendent, Gloucester, Western Region

Mr. D. M. Bowick
Appointed District Operating Superintendent, Lincoln, L.M. Region

cations Committee. Mr. Cardani is a member of the Institution of Railway Signal Engineers. He serves on the Examination Committee of that Institution, and on the Committee on miniaturisation in railway signalling.

Mr. J. K. Lord, Electric Traction Engineer, Manchester, London Road, London Midland Region, British Railways, who, as recorded in our September 11 issue, has been appointed Electric Traction Engineer, Liverpool, joined the railway in 1930 as an apprentice fitter. Mr. Lord became Assistant Foreman, Birkenhead, in 1943, and Depot Foreman, Ilford Car Sheds in 1949, in connection with the Liverpool Street to Shenfield electrification. He became Rolling Stock Foreman in 1950, Rolling Stock Engineer in 1952, and Electric Traction Engineer (Manchester-Sheffield-Wath lines) in 1956. In his new appointment Mr. Lord is responsible for the Liverpool-Crewe electrification scheme and the Liverpool-Southport Wirral electrified lines.

Mr. R. K. Innes, General Manager of the Nigerian Railway Corporation, is on leave in the United Kingdom.

Mr. J. O. Eaton has been appointed Staff & Organisation Assistant to the Chief Civil Engineer, London Midland Region, British Railways.

Mr. N. R. Crump, President of the Canadian Pacific Railway Company, has been elected a Director of International Nickel Co. of Canada Ltd.

Mr. J. R. Farquharson, Acting Commissioner for Transport, and General Manager, East African Railways & Harbours, has returned from leave in the United Kingdom. During his absence his duties were carried out by the Deputy General Manager, Mr. W. Urquhart.

Mr. C. F. Rose, Production & Works Assistant to the Chief Mechanical & Electrical Engineer and the Carriage & Wagon Engineer, Doncaster, Eastern & North Eastern Regions, British Railways, has been appointed Mechanical & Electrical Engineer (Development), Chief Mechanical & Electrical Engineer's Department, London, Eastern Region.

Mr. J. Powell, M.Inst.T., District Goods Manager, Paddington, Western Region, British Railways, who, as recorded in our September 11 issue, has been appointed District Traffic Superintendent, Gloucester, joined the Great Western Railway, at Cardiff Goods Station, in 1921. After serving at several stations in the Plymouth and Exeter Districts, he was appointed Junior Assistant to the London District Goods Manager in 1935, and Chief Clerk in the same office in 1938. In 1943 Mr. Powell was appointed Assistant District Goods Manager, Swansea, and returned to London, in 1946, as Assistant District Goods Manager, Paddington. In 1948 he became Assistant to the Chief Commercial Manager Paddington, and was responsible for Parliamentary & New Works, Private Sidings, and Accounts matters. He was appointed District Goods Manager, Paddington, in 1951.

Miss H. M. Evans, Welfare Supervisor, Scottish Region, British Railways, has been appointed Welfare Officer (Women), London Midland Region.

Mr. Harry Eeles has been appointed Director of Development at the British Institute of Management, with the primary responsibility of developing the Institute's relations with the larger industrial and commercial concerns throughout the country.

Mr. E. H. Ker, Assistant to the Motive Power Superintendent (Maintenance), Eastern Region, British Railways, has been appointed Locomotive Engineer, Chief Mechanical & Electrical Engineer's Department, Eastern Region.

Mr. Charles McLeod Cary has resigned, on medical advice, as a Director of the Trans-Zambesia Railway Co. Ltd. His connection with the company dates back to its inception, over 40 years ago. He was the company's first Secretary and, in 1931, was, in addition, appointed London Manager. Mr. Carey became a Director in 1947.

Mr. J. P. Hippisley, Assistant Road Motor Engineer, Kings Cross, Eastern Region, British Railways, has been appointed Plant & Road Vehicle Engineer. Mr. N. Newsome, formerly Divisional Outdoor Carriage & Wagon Engineer (Southern), Stratford, becomes Rolling Stock Engineer.

Mr. D. M. Bowick, A.M.Inst.T., Assistant (Special Duties), Regional Establishment & Staff Office, Eastern Region, British Railways, who, as recorded in our September 4 issue, has been appointed District Operating Superintendent, Lincoln, joined the London & North Eastern Railway at Edinburgh in 1941. During the 1939-45 war he was commissioned in the Air Branch of the R.N.V.R. On his return, in 1946, Mr. Bowick gained district office experience in Scotland, before being appointed a Traffic Apprentice in 1947. On completion of his training he was appointed Supernumerary Assistant Yardmaster, Annesley, and was subsequently Assistant Yardmaster, Frodingham; Deputy Head of New Works & Electrification Section in the office of the Divisional Operating Superintendent, Liverpool Street; Head of Passenger Section, Divisional Operating Superintendent's office (Eastern), Liverpool Street; Productivity Assistant to the Divisional Operating Superintendent (Eastern), Liverpool Street; Assistant in the Finance Division at B.T.C. Headquarters; and Deputy Productivity & Work Study Officer at Eastern Region Headquarters. Since 1958, he has been Assistant (Special Duties) in the Regional Establishment & Staff Office, Eastern Region, which position he vacated to take up his present appointment.

We regret to record the death in London, at the age of 71, of Colonel Juliusz Ulrych, former Polish Minister of Communications. Colonel Ulrych played an important part in the reconstruction of the Polish State Railways.

Mr. J. W. Grieve, Assistant Electrical Engineer (New Works), Chief Mechanical & Electrical Engineer's Department, Eastern & North Eastern Regions, British Railways, has been appointed Electrical Engineer (New Works), in the Department of the Chief Mechanical & Electrical Engineer, Eastern Region.

We regret to record the death on October 26, at the age of 62, of Mr. F. L. H. Bascom, Senior Engineer, Crown Agents for Oversea Governments & Administrations. Mr. Bascom was awarded the O.B.E. in the last Birthday Honours, and a picture and biography of him was published in our September 4 issue.

The late Dr.-Ing. A. J. Büchi
Pioneer in the development of gas-turbo pressure-charging

Mr. H. A. Lee
Appointed Passenger Traffic Manager, Montreal, C.P.R.

Mr. G. E. Carter
Passenger Traffic Manager, Montreal, C.P.R., 1952-59

Dr. Ing. Alfred J. Buchi, inventor of gas-turbo pressure-charging, whose death was briefly recorded last week, was born at Winterthur in 1879. He was trained under the celebrated Professor A. Stodola at Zurich, and early in the 1900s occupied a responsible position at Carels Fréres, in Belgium, one of the very early builders of diesel engines. In 1909 he joined Sulzer Bros. as Chief Engineer and Head of the Research Department. It was here that the first actual trials of exhaust gas-turbo pressure-charging were carried out, though Dr. Buchi's first patent on this subject dated back to 1905. He remained with Sulzer until after the 1914-18 war. In 1926 he founded the Buchi Syndicate with the Swiss Locomotive & Machine Works and Brown Boveri with a view to developing the pressure-charger and its applications and his more recent patents. During 1928-35 he was additionally entrusted with the technical management of the Swiss Locomotive Works. The Buchi Syndicate lapsed some years ago, and in recent years Dr. Buchi and his son operated as the Engineering Office of Dr. A. J. Buchi, and developed not only advanced designs of pressure-chargers but also special diesel engines, such as the Buchi Telescope unit.

Mr. J. C. Hambly, Senior Quantity Surveyor, Waterloo, Southern Region, British Railways, has been appointed Chief Quantity Surveyor, Chief Civil Engineer's Department, Waterloo. He succeeds Mr. J. C. Cole, who is retiring on December 31.

Mr. Pearson Armstrong, Assistant Regional Establishment & Staff Officer, Paddington, Western Region, British Railways, has been appointed Regional Establishment & Staff Officer, Liverpool Street, Eastern Region.

We regret to record the death, at the age of 87, of Mr. W. F. Minnis, General Manager, Belfast & County Down Railway, 1926-44; Chairman, General Managers' Conference of Irish Railways, 1929 and 1935; Member of the Irish Railway Wages Board.

Mr. W. Gilmour Smith, Chairman, W. Gilmour Smith & Co. Ltd., and Gilmour Smith (Engineering) Limited, leaves the U.K. on November 14 for an extensive tour of the African Railways, returning to his country on January 8.

Mr. H. A. Lee, Passenger Traffic Manager, Winnipeg, Canadian Pacific Railway, who, as recorded in our August 21 issue, has been appointed Passenger Traffic Manager, Montreal, joined the C.P.R. in 1913. He served in the U.S. Navy during the 1914-18 war. After service in Boston, he was appointed Assistant General Agent, New York, 1934. He became Assistant General Passenger Agent, Montreal, in 1940, and General Passenger Agent, Toronto, in 1943. He was General Passenger Agent, Montreal from 1950 until his promotion in 1952 to Passenger Traffic Manager, Winnipeg, the position he now relinquishes.

Mr. J. Dummelow has been appointed Publicity Manager, Metropolitan-Vickers Electrical Co. Ltd.

Mr. E. Powell has been appointed to the board of the Chloride Electrical Storage Co. Ltd.

Mr. R. I. Douglas, Railway Sales Engineer, Permali Group, leaves London on November 16, for a business visit, lasting about one month, to South Africa and Rhodesia.

We regret to record the death, on November 3, at the age of 69, of Mr. J. Bridger, who was District Traffic Superintendent, Redhill, Southern Region, British Railways, 1945-55.

Mr. Wilfred Hirst, Manager, Gear Division of George Angus & Co. Ltd., has left the company to take up an executive appointment with Tweedales-Smalley Limited. He has been succeeded by Mr. H. F. Macintosh, formerly Technical Sales Manager, Whites Marine Engineering Co. Ltd.

Mr. A. F. Harvey, M.I.E.E., M.I.Loco.E., Project Engineer, Traction Department, Rugby Works, Traction Division, Associated Electrical Industries Limited, has retired. Mr. Harvey joined British Thomson-Houston Co. Ltd., in 1920, in the Test Department. He later went to Buenos Aires as Technical Assistant to the Superintendent of Electrification, Central Argentine Railways. He returned to England in 1927 and, until 1933, was with London Electric Railway. He rejoined B.T.H. Co. Ltd. in 1936, in the Traction Department, Rugby Works (now part of A.E.I. Traction Division) where he remained until his retirement.

Mr. George E. Carter, Passenger Traffic Manager, Montreal, Canadian Pacific Railway, who, as recorded in our August 21 issue, has retired, joined C.P.R. at Saint John, 45 years ago. Following military service, 1915-19, he returned to Saint John, and subsequently he served in Europe, New York and Montreal. Later he became District Passenger Agent, Saint John, and was appointed Assistant General Passenger Agent, Montreal, in 1930. He became General Passenger Agent in 1932; Assistant Passenger Traffic Manager in 1943, and Passenger Traffic Manager in 1952.

Mr. J. Garlick has been appointed Principal Private Secretary to the Minister of Transport.

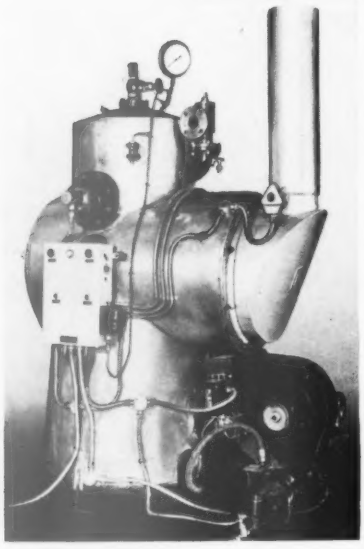
Sir John Pascoe has joined the board of the Timken Roller Bearing Company of Canton, Ohio.

Mr. C. W. V. Davis, a Director of Research & Control Instruments Limited, will head the newly-formed Industrial Products Division of the company which will in future distribute Philips arc-welding supplies, filtration equipment and high frequency generators.

Mr. W. H. Statham, Sales Engineer, Furnace Division, Birlec Limited, has been appointed Area Representative for South Wales. He will be in charge of the newly-created South Wales Area Sales Office at Associated Electrical Industries Limited, Mervyn House, Frederick Street, Cardiff.

Mr. F. Burgess, Whites-Nunan Limited, has been elected Chairman of the British Valve Manufacturers' Association for 1959-60. Mr. J. W. Plowman, Dewrance & Co. Ltd., becomes Vice-Chairman. The other members of the Executive Committee are: Messrs. D. Bailey, Sir W. H. Bailey & Co. Ltd.; F. T. Bintcliffe, J. Blakeborough & Sons Ltd.; D. S. Birkett, Samuel Birkett Limited; G. F. Chambers, Bryan Donkin Co. Ltd.; F. S. Ham, Ham, Baker & Co. Ltd.; H. R. Hammond, Crane Limited; K. M. Leach, Audley Engineering Co. Ltd.; N. P. Newman, Newman, Hender & Co. Ltd.; T. B. Pattison, Alley & MacLellan Limited; A. Robertson, Glenfield & Kennedy Limited, and Mr. A. L. Trump, of Saunders Valve Co. Ltd.

NEW EQUIPMENT AND PROCESSES



Heating Boiler for Railways

A HEATING boiler for railway use must be of minimum size and weight, operate automatically and without attention under varying demand, and be of 100 per cent reliability. Since the introduction in 1951 of the Spanner train-heating boiler, the manufacturer has gained considerable operating experience with many hundreds of units in railway service at home and abroad, and railway requirements are claimed to have been met with a new boiler incorporating vertical fire-tubes. The only exceptions to this claim are stated to be in connection with certain applications where boiler weight is more than can be accommodated on the locomotive. The weight of the vertical fire-tube boiler has always exceeded that of the flash-tube variety because its construction demands greater water capacity.

Size and weight of the new Mark II fire-tube boiler with horizontal tubes are the same as those of a flash-tube boiler of equivalent steaming capacity. Although the cylindrical shell is of minimum water capacity, there is adequate sludge space beneath the lower row of tubes. Steam passes through slots in the upper surface of the shell and into a vertical cylindrical dome. The economies which have been made in water capacity have resulted in a reduction of steam-raising time from cold to under 5 min. and a lessening of water-level variation between cold and hot.

The conical vertical furnace is water-cooled a form of construction which requires refractory lining in one place only—the base of the furnace. This point is of especial interest, for refractory linings are liable to fracture under rail traction vibration. Exhaust is carried through a vertical pipe attached to a collecting box at the end of the tube assembly.

Although there is only one pass of the tubes, which are relatively short, normal thermal efficiency is claimed to be not less than 80 per cent. This high efficiency is mainly achieved through the method of fuel injection and use of the Swirlyflo tube. This, formed with three internal helical grooves, presents an equivalent surface to that of a plain tube, yet promotes highly turbulent flow and subsequent increase in the heat transfer per unit of surface area.

Because the aim is to cut down the size of the boiler yet retain a high rate of fuel burning with smokeless combustion, air is mixed with the oil and the mixture sprayed into the furnace. For simple servicing and improved reliability, flame-modulating equipment has been omitted and a simple "On"/"Off" automatic burner control incorporated. Operation is economic—the electric motors do not run continuously on part loads. The air-fan is flange-mounted directly on the burner tube attached to the furnace, and a vee-belt takes the drive of its motor, which, through a direct coupling, also drives the fuel pump.

Conventional electrodes provide ignition of the oil/air spray, but the a.c. current is supplied by slip rings at the end of the burner-driving motor. Feed-water is supplied to the boiler by an automatically-controlled motor-driven pump mounted on brackets on the boiler shell. Boiler mountings include a Mobrey magnetic feed-water level regulator, sight-level tubes, steam- and oil-pressure gauges, fluestat, stop valves, blowdown valve, and a number of inspection and cleaning holes.

A small panel mounted on the boiler houses the automatic electric controls, which include the flame-failure cut-out switch, pressure switch for "On"/"Off" control, and warning lights. Connections are provided for duplicate indications in the driver's cab, and provision is made for a cab-operated steam supply shut-off valve.

The manufacturer claims maximum reliability and minimum servicing for this boiler, with its robust construction, simplified burner equipment, and avoidance of small-bore water tubes, which can cause scale-clogging. This reliability factor is considered of major importance when considered in relation to the fact that the majority of trains are hauled by single locomotives with standard heating equipment.

Further details can be obtained from Spanner Boilers Limited, Wokingham Road, Bracknell, Berks.

Lightweight Welding Blowpipe

THE "Lightweight Saffire" is a welding blowpipe of exceptional lightness—it weighs only 9½ oz. It has forward-mounted controls for easy adjustment, and is 13¼ in. in length.

The blowpipe has a new type of mixer assembly specially designed to provide a stable flame and resistance to back-fires over the whole working range. The normal range, which is covered by six nozzles, permits welding of sheet steel up to $\frac{5}{32}$ in. thick, but three additional nozzles are available for thicknesses up to $\frac{3}{16}$ in.

Inlet construction and valve blocks are machined aluminium stampings, while gas tubes are drawn aluminium. Handle valves are aluminium die castings. Gas control valves can be finely adjusted and have stainless steel spindles. Gland caps are of polished chromium-plated brass. The fluted control knobs are of colour-coded anodised aluminium. Length of shank is $6\frac{7}{8}$ in. and its weight is 6¼ oz.

Assembly is of an improved design which results in better gas mixing and greater resistance to back-fire. It is made entirely of brass.

Nozzles are of swaged copper construction with accurate smooth internal bores produced by a special process. All but the two largest sizes are $9\frac{7}{8}$ in. long and weigh 1 oz.

Further details can be obtained from the manufacturer, British Oxygen Gas Limited, Spencer House, St. James's, London, S.W.1.

Gold-film Development

GOLD-FILM windscreens of a greater curvature than previously has been possible, and which could be applied to diesel locomotives, will be produced in a new gold-film plant planned at the King's Norton, Birmingham, factory of the Triplex Safety Glass Co. Ltd.

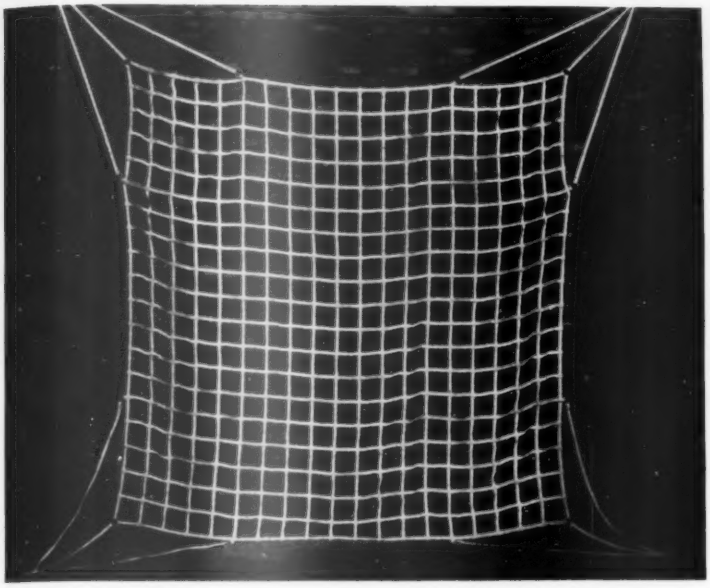
Hand Winch Lift Truck

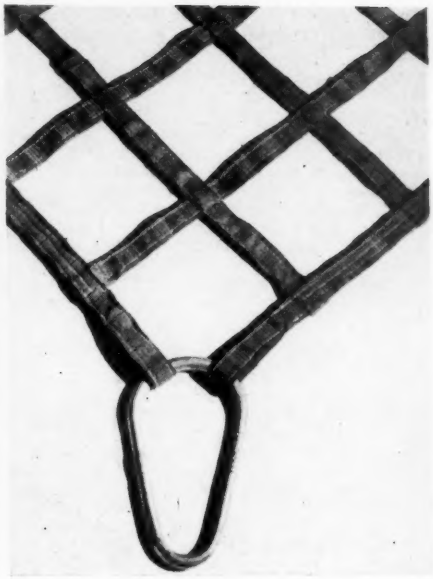
THE "Quik-Lift" hand winch elevator truck lifts or lowers light loads rapidly, the maximum load being 350 lb.

Although the elevator is self-sustaining at all heights, brake and ratchet and pawl mechanism are necessary. The load automatically remains stationary whenever the handle is released.

The wire rope pulleys run on needle bearings and the carriage rollers have roller bearings. Standard platform size is 21 in. long x 22 in. wide.

The model illustrated lifts to 7 ft. and is fitted with two 8 in. dia. wheels for easy manoeuvrability. Another version, suitable





where floor surfaces are even, has two 4-in. front wheels and two rear wheels in swivel castors.

These elevators can be made to lift to any height between 4 and 10 ft.

Further details can be obtained from Messrs. Powell & Company, Burry Port, Carms., South Wales.

Woven Webbing Freight Nets

AN entirely new construction principle is used in the design and manufacture of a freight net recently developed.

The net is built up from woven nylon webbing slotted at intervals to permit the interposition of transverse lengths of webbing of similar construction.

Main characteristics are strength and lightness, immunity to rotting and the action of seawater, high abrasion resistance, and compactness for storage.

Developed primarily for use by the Services to extremely stringent specifications, the net is adaptable to a wide variety of civil and industrial usages. The three standard sizes—8, 12, and 14 sq. ft., weighing respectively 17, 26, and 28½ lb.—will meet the majority of uses, but the construction of the slotted tape lends itself to the making of special-purpose nets of many sizes and shapes. The nets can also be supplied in a variety of colours as a means of identification.

When provided for the handling of food, the natural state of the webbing complies with the requirements of the Food and Drug Adulteration Act.

Where hoist links and becket fixing rings are fitted, these are made from drop-forged steel to comply with B.S.S. 970 or 2902 as appropriate.

Further details can be obtained from Thos. French & Sons Ltd., Chester Road, Manchester, 15.

P.V.C. Waterproofs

DUCK-DRI is a new range of P.V.C. waterproof clothing claimed to offer increased strength among a number of other advantages. Manufactured from close-weave cotton duck impregnated on the face side with a highly flexible P.V.C. coating, the new range provides a supple, weatherproof, medium-weight garment. As well as high tear-strength, the waterproofs offer good abrasion resistance because of an additional 2-3 oz. of plasticiser per sq. yd., and a reduced tendency to crease during storage. The absorbent quality of the cotton duck fibres on the unproofed inside of the garment minimises effects of condensation.

Waterproof jackets, long coats, leggings, trousers, and sou'westers are available in standard olive green in three sizes. Delivery is from stock, and prices are as follow: long coats from 41s. each, jackets from 33s. each, trousers from 25s. 8d. per pair, leggings from 14s. 5d. per pair, and sou'westers from 7s. 8d. each.

Further details can be obtained from the manufacturer, Jeltek Limited, Green Lane, Hounslow, Middlesex.

New Use for Pitabond

A SIMPLE, clean, economical, and absolutely effective method of fixing expanded polystyrene panels has been developed. This is as follows:—

First prime all surfaces to be bonded with equal parts (by volume) of Pitabond and water. For porous surfaces, add 10 parts and more of water to 1 part of Pitabond. Now make up mix of equal parts of Pitabond and cement, add water to form firm slurry, and fix.

Although an immediate bond is effected, there is plenty of time for adjustment. Further details can be obtained from Caulking Services Limited, 36, Gt. Queen Street, Holborn, London, W.C.2.

All-purpose Saw

THE "Eclipse" No. 66 general-purpose saw has a 16-in. tungsten steel blade specially tapered to facilitate sawing in confined spaces. The blade can be quickly positioned and locked at any one of nine different angles relative to the handle—a feature which makes the saw ideal for cutting materials in awkward positions. The blade clamping screw and wing nut cannot be separated and, therefore, cannot be misplaced or lost.

The saw will cut easily such materials as hard and soft wood, wood in which nails or bolts are embedded, hard rubber, plastics, fibreboard, and small tubes and bars made from mild steel, copper, brass, aluminium, lead and the like. Spare blades are supplied in a cardboard sheath. Price of the saw is 15s. 6d. Spare blades are 6s. 6d. each.

Further details can be obtained from the manufacturer, James Neill & Co., (Sheffield) Ltd., Napier Street, Sheffield 11.

Range Pumps

THE "Monobloc" centrifugal pump has been enlarged by the addition of the type "DO," which comprises open impeller pumps specially designed to handle slurries, paper stock, liquids containing small solids, and viscous and clear liquids.

Capacities of from 10 to 360 g.p.m. and heads up to 86 ft., depending on capacity, are covered.

Further details can be obtained from the manufacturer, Worthington-Simpson Limited, Lowfield Works, Newark, Notts.

Single-Stage Regulators

THE S.O.R.1. and S.A.R.1. are new single-stage oxygen and acetylene regulators for rough service conditions where very fine pressure adjustment is not required. Despite robust construction, each weighs only 3 lb. They are intended for use in heating and cutting applications, and are considered particularly suitable for general cutting and "on-site" work.

The small-dial pressure-gauges are 1⅞ in. dia. and give a pressure range of 0-3,000 lb. per sq. in. oxygen and 0-600 lb. per sq. in. acetylene. Their strength is increased by the use of ¼-in. national pipe taper thread which gives an approximate diameter of ⅜-in. A feature of the regulators is that the joints are all solderless.

The range of nominal outlet pressures is indicated by an embossed scale on the top of the spring cap in association with a pointer contained on the pressure adjusting knob.

Single-stage regulators are prone to freezing at high flow rates. Every care has been taken to avoid such an occurrence with this new design.

Further details can be obtained from the manufacturer, British Oxygen Gases Limited, Spencer House, St. James's, London, S.W.1.

XUM

European Timetable & Through Carriage Conference

At the invitation extended by Austrian Federal Railways at the conference at Leipzig last year, the European Timetable & Through Carriage Conference was held this year in Vienna on October 7-13. Delegates attended from most of the European and from the Turkish State Railways, also from Transport Ministries, the International Union of Railways, the Wagons-Lits Company, the D.S.G. (German Sleeping & Dining Car Company), Mitropa, Orbis, and shipping and other interests. Plenary sessions were held in the Schwarzenberg Palais.

British Railways were represented by *Southern Region :* Mr. R. E. Sinfield, Shipping & Continental Manager; Mr. S. A. Fitch, Assistant General Manager (Traffic); Mr. H. J. Bourn, Continental Superintendent; Mr. W. J. Nigh, Passenger Assistant to Continental Superintendent; Mr. S. W. Robins, Shipping & Continental Manager's Office; *Eastern Region :* Mr. S. A. Claydon, Continental Traffic & Shipping Manager; Mr. K. V. Smith, Assistant Commercial Superintendent; Mr. E. F. Abbott, Head of Continental Passenger Section; and Mr. C. H. Archer, Continental Traffic & Shipping Manager's Office.

Matters discussed at the plenary sessions included: validity of international timetables; analysis of international passenger traffic; unification of categories of trains used in such traffic; and reservation of seats. Dates for the operation of train services on the Continent during the summer, 1960, and winter, 1960-61, were agreed as follows: summer service, May 29 to October 1, 1960, and winter service, October 2, 1960, to May 27, 1961. At the invitation of the Minister of Transport of the U.S.S.R. the next European Timetable & Through Carriage Conference will be held in Leningrad from September 28 to October 4, 1960.

" Golden Arrow " Morning Departure

Among many details agreed was the reversion of the southbound " Golden Arrow " London-Paris Pullman service to a morning departure from London, leaving Victoria at 11 a.m. instead of in the afternoon.

From October 2, 1960, the departure time of the service from London to Paris and Switzerland *via* Folkestone/Calais will be 2.30 p.m. instead of 12.30 p.m. The " Simplon-Orient Express " is being accelerated in both directions as from May, 1960. One night will be saved to and from Belgrade, and several hours to and from Athens, Sofia, and Istanbul. The S.O.E. will convey to Milan through vehicles for Rome and Naples *via* Florence which normally comprised the " Rome Express " *via* Modane.

Trains Nos. 7 and 8 which for many years have operated between Paris and Basle will cease to run after next May. Trains 49 and 48, consisting of vehicles to and from Milan, Chur, Vienna, and Bucharest will run instead. Departure from Paris Est will be at 9.55 p.m.

Moscow via The Hook

A new service between Western Europe and Moscow has been agreed in principle. It is to include *couchettes* thrice weekly between the Hook of Holland (in connection with the Harwich-Hook day steamers) and Moscow. Eastbound, departure will be from Liverpool Street at 10.5 a.m., and the Hook at 7.14 p.m., with arrivals at Berlin Zoo at 7.8 a.m. (second day), Warsaw at 7.18 p.m. (second day), and Moscow 9.30 p.m. (third day). The westbound provisional schedule affords corresponding timings.

New Express Goods Service from Lea Valley

To meet the growing needs of light industry in the Lea Valley, the Great Eastern Line of British Railways, Eastern Region, introduced a named fully-braked goods train on November 2, the " Lea Valley Enterprise." The train is diesel hauled between Tottenham and Whitemoor marshalling yard.

The stations served in the Lea Valley are : Tottenham, Angel Road, Ponders End, Brimsdown, Waltham Cross, and Broxbourne. Departure from the last-named is at 5.7 p.m. Consignments are due next morning at many destinations in the Midlands and North, including Birmingham, Bradford, Hull, Leeds, Liverpool, Manchester, Newcastle-on-Tyne, and West Hartlepool. Arrivals in Edinburgh and Glasgow are at mid-day, and at most other large centres in Scotland during the afternoon, of the day after despatch, or the following morning.

Containers of capacity varying from 70 to 700 cu. ft. and weight capacities of 1-4 tons, are available. Collection and delivery by road of sundries and wagon-load traffic are timed to fit train departure times. Many of the road vehicles are articulated, and standing trailers can be loaded and unloaded at stations or on customers' premises.

Special equipment also is available where loads of exceptional size and weight have to be handled.

Reconstruction at Barking, Eastern Region

A further stage of the work on the Barking reconstruction scheme, being carried out in connection with the electrification of the London Tilbury & Southend line, British Railways, Eastern Region, was completed last Monday, when the dive-under and flyover to carry west-bound L.T.E. District Line trains under and over the main Fenchurch Street-Southend lines, was brought into use, providing cross-platform exchange between London Tilbury & Southend line trains and District Line services at Barking Station for passengers travelling to London.

This scheme was started in July, 1956, and has been carried out without serious interference to the dense steam and electric suburban traffic. This has been achieved by careful staging of the work, much of which has been done at week-ends and at night. The up line over the main flyover was brought into use on January 5 and the down line on May 11 this year. This flyover is a quarter of a mile in length and carries the heavy and growing freight traffic between North Thames-side and all parts of the country across the intensively used Southend lines and local electric passenger lines, eliminating crossings on the level east of Barking Station. Boat trains between St. Pancras and Tilbury also run over this flyover.

Work to place the west-bound District Line in its new alignment started at 11 p.m. on Saturday night, November 7, and continued throughout Sunday and until 5 a.m. last Monday. There were no District Line trains between East Ham and Upney during that time, but special buses provided a service between East Ham, Barking and Upney Stations.

Re-signalling and Station Reconstruction

Work is well in hand on the construction of a new signalbox at Barking which will replace the existing boxes at Barking West and East and will control all train movements as far west as Plaistow and east to Hornchurch. Demolition work has commenced at Barking Station in preparation for the construction of the new station buildings. These will contain many enlarged and improved facilities for passengers. The new station concourse, which will be considerably larger than the existing one, will have a seven-window ticket office. There will also be separate enquiry and parcels offices. The work is expected to take approximately two years to complete.

The " Lea Valley Enterprise," hauled by Brush Type " 2 " A1A-A1A diesel-electric locomotive, before departure for Whitemoor

RAILWAY TRAINING IN THE UNITED KINGDOM. —The booklet mentioned in our October 23 issue, published by the Ministry of Transport and describing the training facilities in the United Kingdom available for the staffs of railways in the region of the United Nations Economic Commission for Asia & the Far East (E.C.A.F.E.), is intended primarily for railway administrations in member countries of E.C.A.F.E. It is not available or applicable for individuals in this country.

Retired Railway Officers' Society Luncheon

Mr. John Hay on the need for foresight and flexibility in solving railway problems

The annual autumn luncheon of the Retired Railway Officers' Society took place at the May Fair Hotel, London, W.1, on November 10. Mr. A. W. Norman, the President, was in the chair.

Mr. Norman, after the Loyal Toast, welcomed the guests. He expressed the Society's pleasure at the presence of Mr. John Hay, Joint Parliamentary Under-Secretary, Ministry of Transport, of senior officers of the British Transport Commission and British Railways, and of other guests. He regretted the unavoidable absence of the Minister of Transport, Mr. Ernest Marples, and that, through illness, of Mr. A. B. B. Valentine, Chairman of London Transport Executive. He proposed the toast of the guests, coupled with that of Mr. John Hay.

Mr. John Hay, replying, stressed the need for an efficient railway system. In determining the answers to the problems facing the railways, he stated, account must be taken of changes in demands for transport, such as the reduction in the requirement for movement of coal. In planning, they must look ahead 25-30 years and take into account possible competition from other forms of transport, such as the hovercraft. There must be flexibility in planning.

His own grandfather, Mr. Hay added, had been a signalman in Fifeshire, and his brother was now a traffic apprentice on British Railways.

He praised the work of the last Minister of Transport, Mr. Harold Watkinson, and of his own predecessor as Under-Secretary., Mr. G. R. H. Nugent, The present Minister, he believed, was a dynamic personality who was making every effort to find, and to put into effect, ways to solve the problems facing the railways.

Sir John Benstead, Deputy Chairman of the British Transport Commission, proposed the toast of the Society. The problems faced by the Regions of British Railways in re-creating a large part of their system were immense. He paid a tribute to the work of railway officers, who, he said, had been justly described as men dedicated to their task.

Tradition of the Railway Family

He emphasised the importance of the tradition of the railway family as a source of good recruits to the railway service, and hoped that his audience, as railwaymen, would encourage young people of the right kind to join. Nobody must be allowed to think that the railways were a dying industry.

Major-General G. S. Szlumper, a former General Manager of the Southern Railway, replied.

Mr. W. E. Blakey, formerly Assistant Commercial Superintendent, British Railways, Eastern Region, proposed the health of the President.

Those who intimated their intention to be present were:—

Messrs. E. W. Arkle, B. Adkinson, A. Bond, V. Bowen Cooke, W. P. Bradbury, D. Bassett, H. J. Burcham, R. W. Boorman, A. P. J. Ball, G. B. Barton,

Sir John Benstead, Sir Reginald Biddle, Messrs. E. G. Brentnall, W. E. Blakey, David Blee, S. M. Birch, L. J. Boucher, E. W. Bratchell, L. C. Brittlebank, E. W. Binks, F. W. Baker,

Messrs. F. H. Colebrook, W. S. Cutler, H. J. Caines, F. E. Cox, S. T. Clayton, A. L. Castleman, T. E. Chrimes, A. D. Cook, B. W. C. Cooke, L. W. Conibear, G. Coaker, N. Calder, W. B. Carter, L. W. Cox, A. Currie, G. E. Curtis,

Messrs. W. R. Davies, A. E. C. Dent, J. Dedman, E. C. Dewick, H. J. Donovan C. G. Derbyshire, R. Davis, J. T. Drinkwater. P. Drew, J. W. Enser, Sir John Elliot, Sir Ralf Emerson,

Messrs. L. E. Fenn, E. Flaxman, F. C. Fox, G. F. Fiennes, B. P. Fletcher, I. R. Frazer, F. H. Gee, J. Graham, R. O. Griffiths, A. T. Gosden, F. Grundy, J. Gillespie,

Messrs. G. S. Halliday, E. G. Harrison, T. R. Hawkes, E. S. Hunt, A. E. Hammett, R. P. Humphrys, R. A. Humphrys, A. P. Hunter, J. F. Harrison, John Hay, R. B. Hoff, T. Howard Williams, J. R. Hammond, G. J. Harris, R. F. Harvey, F. G. Hole, C. P. Hopkins, J. Hippisley, E. Humphries, G. Hickling,

Messrs. A. Jones, C. L. Jolliffe, J. S. Jones, B. X. Jessop, N. McK. Jesper, W. Guy Jones, C. Jordan, L. C. Johnson,

Messrs. W. P. Keith, J. W. Kerr, C. F. Klapper, D. R. Lamb, T. J. Lynch, J. H. Laundy, E. C. Lloyd, C. J. C. Latham, E. W. Mauger, L. A. Metcalf, A. B. Macleod, W. J. Manclark, P. S. Martin, A. F. Moss, D. Murray, M. G. Maycock, G. Morton, A. E. Marriott, A. W. McMurdo,

Messrs. T. Neal, L. H. K. Neil, A. W. Norman, R. Norrish, P. Nunn,

Messrs. A. Packer, A. C. B. Pickford, H. D. Poole, S. E. Parkhouse, M. Pearson, H. W. Phillips, W. H. J. Pyne, Sir Allan Quartermaine,

Messrs. R. A. Riddles, H. G. Rampling, A. S. Railston, H. G. D. Read, J. Ratter, V. A. M. Robertson, C. I. Routh, W. B. Richards, T. W. Royle,

Messrs. F. Sartin, R. Scarisbrook, H. H. Starr, G. H. Searle, L. M. Sayers, T. Swan, G. Sutcliffe, F. Smith, W. Y. Sandeman, Sir W. A. Stanier,

Major-General G. S. Szlumper, Messrs. F. H. Sedgwick, A. Shouler, W. S. M. Stapleton. J. Stingelin,

Messrs. W. G. Thorpe, J.Taylor Thompson, E. D. Trask, R. L. Vereker, J. W. Terry, H. B. Taylor,

Messrs. E. Wharton, F. W. Wharton, J. R. Worrall, A. W. Woodbridge, H. E. O. Wheeler, S. Williams, F. J. Wymer, R. F. Wilson, W. E. Yates.

Locomotive Engineers Visit Brush Electrical Works

Members of the Institution of Locomotive Engineers and their guests, numbering in all over 240, visited the works of the Brush Electrical Engineering Co. Ltd. at Loughborough on October 28. The party was received by Dr. B. L. Goodlet, Managing Director.

A great variety of traction machines and industrial power-station generating and control equipment, also transformers, were seen at various stages of manufacture and under test. A large proportion of the company's output in these fields is for export markets.

Long Association with Railways

A range of shunting locomotives of 180-660 h.p. is manufactured at the Loughborough works, which has been closely associated with railway manufacture since the early part of the last century. These, with the latest Brush A1A-A1A Type "2" 1,365-h.p. diesel-electric main-line locomotives for the Eastern Region of British Railways, formed the major items of interest. The latter type of locomotive is being produced for British Railways at the rate of two a week.

The visitors were shown examples of rail traction diesel engines manufactured by associated companies in the Hawker Siddeley Group, notably the JVST12 1,365-h.p. unit of Mirrlees Bickerton & Day Limited and the LE6 National-Mclaren of the National Gas & Oil Engine Co. Ltd. They also inspected, and were given short demonstration runs, on a British Railways Type "2" locomotive and a standard Brush 200-h.p. 30-ton shunting locomotive.

The party was led by Mr. R. A. Smeddle,

Dr. B. L. Goodlet addressing the party at Loughborough, with Mr. R. G. Hooker, Director & General Manager, Brush Electrical Engineering Co. Ltd., Mr. F. H. Wood, Manager, Traction Division, Mr. R. A. Smeddle, and Mr. G. T. Hart

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President of the Institution. It also included Messrs. J. F. Alcock, Vice-President; R. Arbuthnott, Past President; H. H. C. Barton, J. H. Cansdale, Colonel K. Cantlie, and Mr. G. Collingwood, Members of Council; Messrs. M. A. Crane and W. H. Dixon, Members of Visits Committee; G. T. Hart, Secretary; R. F. Harvey and E. D. Trask, Members of Council; J. S. Tritton, Past President; J. F. B. Vidal, Past President & Member of Visits Committee; S. I. White, Member of Council.

Parliamentary Notes

Road and Rail Communications

In the House of Lords on November 4 there was a debate lasting 5 hr. on a motion by Lord Lucas of Chilworth. The motion called attention to " the failure of the existing road system to match present needs, and to the inadequacy of the future construction to meet the anticipated expansion of the country's economy; and also to the need to inquire into the operation of the railway system in these regards."

Lord Lucas wished a Director of Road Construction to pursue a five-year national road plan, but when he came to the second part of his motion, he did not know whether he had any practical solution. " I think," he added, " that the railways of this country are providing us with quite an intractable problem. Quite frankly, I believe that the crisis in the railways as a factor in our transport system—and surely it is not playing anything like its proper part in the economy today—will come within the lifetime of the present Parliament."

He was not going to suggest a high-powered inquiry into the operations of the B.T.C. Yet it was not functioning properly. The trouble was right at the top. He was not certain that Parliament was largely to blame. " We set up a massive structure," he went on, " which experience has proved is unworkable and is not geared to the modern age. We have an overall Commission of 15 people, of whom eight are part-time, when the whole of successful industry today concentrates itself on executive, full-time directors. I do not think the public is being told the truth. When we debated the 1956 proposals for the railways, I said in this House that they would not work, and that the financial provisions would not be met. They were not. So we had to have a reappraisal. If the opening of the motorway, M1, along which new coaches travel from Birmingham to London in the same time as an express train, and at half the price, does not put the fear of God into the B.T.C., I do not know what will."

The greatest single relief of congestion of London traffic was the L.T.E. Victoria Line. Was the Government to find the money ? It was said the B.T.C. could not build the Victoria Line because it was not profitable. That was nonsense. They had to spread the cost over the whole of the London Underground service. How much property had the B.T.C. ? Millions of pounds worth, eating its head off when property values were at their highest. He was told they had no powers to exploit that situation. Had they asked for them ? They should have powers to exploit this property worth millions, spread all over the country. Let Lord Mills, as a true industrialist, tell the Government what was wrong and put it right.

Car-Sleeper Services

Lord Ferrier believed that the car-sleeper services could be developed. There was no car-sleeper service on the London-Edinburgh route. The Treasury might help with a subsidy towards the taking of long-distance private car traffic off through roads and carrying it on the rail.

Viscount Massereene & Ferrard said that far more traffic, certainly goods traffic, could be diverted to the railways. The ordinary motorist was very often frustrated by having to crawl behind a line of car transporters. He had travelled on railways in U.S.A. and all over Europe. British Railways, as regards the passenger service at least, compared very favourably. British express trains were the fastest in the world. British Railways had started an overnight freight service to and from Scotland which could do the journey faster than any lorry, and he hoped industrialists would take advantage of it.

Lord Boothby suggested that it should be compulsory for really heavy traffic to be taken off the roads and carried by rail.

Lord Burden said that, looking back, he thought the railways had got a pretty raw deal. Tribunal inquiries and local objections had delayed many schemes. No other nationalised, let alone private, industry, was hampered and restricted in such a manner. The Transport Tribunal should be abolished, and thus allow the railways to be conducted in accordance with flexible commercial principles. The public relations side of the railways should be strengthened, and train announcers at some main-line stations should have training in elocution.

The Productivity Council, Lord Burden added, was not enough. Everyone in the railway service should be seized of the fact that railway transport was in grave danger. A great effort could pull them through these difficult days, " and that goes for the trade unions as well." Could not they regain some of the courtesy, consideration, and kindness of which they were so justly proud some years ago ?

Consultative Committees

Lord Merrivale said the B.T.C. was concentrating on faster main-line traffic. The Transport Users' Consultative Committees should realise to what extent they could affect the future pattern of communications. He could recall three instances where these committees were able not only to postpone abandonment of services, but to re-impose the reintroduction of a service. Roads and railways should always be considered in conjunction. He regretted that the main-line electrification programme had not proceeded at great speed. He was advised that only two firms in this country could supply the cable catenaries and so on. In France they had seven firms supplying the catenaries, and 11 firms supplying the signalling and electrical material.

Lord Brocket complained of a train from Crewe which ran so fast that trays and plates were thrown about the restaurant car. He hoped that, as railways were essential to this country, they would get down to real improvements, and clean themselves up. In Ireland, where they had much the same problem, but of a much smaller nature, they did in fact sell the railways, because if they found they were uneconomic, they held an auction.

Lord Hawke suggested more underground services as the best way to solve the London traffic problem, and an increase in the suburban capacity of British railways.

The Earl of Lucan proposed a serious investigation of the needs of transport, to ensure a co-ordinated system over the whole country.

Lord Chesham, Joint Parliamentary Secretary, Ministry of Transport, said he had not brought with him a bucket of whitewash nor a roll of flannel. Never had so many offered so much in the way of suggestions in the afternoon. He had counted up to 57 points worthy of comment in his reply, and then he lost count. They would be all considered and studied. The health of both road and rail was vital to the nation, and their development together had to be considered.

The position regarding the Victoria Line, he went on, was that the London Travel Committee reported at the Minister's request on whether this was in fact the best way of spending £55 million if it was intended to spend that sum. The Minister had that report before him now.

Lord Hawke: Will that report be published ? This scheme has been on the scrap heap for years.

Lord Chesham: I cannot say whether that report will be published or not. I do not think that the London Travel Committee has had years and years to study the matter. Its opinion is bound to be valuable. The figures which the London Travel Committee has to show indicate that Government departments have a rather better record in staggering hours than offices generally have. As to modernisation and rationalisation, the B.T.C. has carried out a reappraisal, in the nature of an inquiry. This is under study by the Minister at the moment, but the House will appreciate that as an incoming Minister he needs a little more time for care in the exercise of his judgment on anything so complex and many-sided as the railways, because his decisions may well have a wide significance.

Questions in Parliament

Railway Workshops

Mr. Francis Noel-Baker (Swindon—Lab.) asked the Minister of Transport on November 4, what general direction he had given to the B.T.C. regarding the proportions of carriage, wagon, and locomotive building to be allocated to British Railways works and to private firms, respectively.

Mr. Ernest Marples: None.

Mr. Noel-Baker: Is not the Minister aware that in all railway towns there is very grave anxiety about the position of railway workshops ? A great deal of the work that could, and should, have been done in these shops has been sent to private firms, including one firm which, during this year, has got money from the taxpayer to the amount of £1½ million and which is now in process, or appears to be, of going bankrupt—the North British Locomotive Company. Will the Minister take the opportunity to have a very close look at the B.T.C. policy with regard to repair and building work, and also take an early opportunity to reassure railwaymen that it is not the Government intention gradually to run down the railway workshops and, in the end, sell them off ?

Mr. Marples: The construction and repair of locomotives and rolling stock is entirely a matter for the Commission, and I think that it ought to rest there. The Commission has the responsibility for control, and I do not think I should interfere.

Mr. J. T. Price (Westhoughton—Lab.): At Horwich Locomotive Works fabrication was the stock employment of many people for generations, and we are now in a position in which railway workshops, including those at Horwich, are to be relegated to doing the care and maintenance work of British Railway services.

Mr. Marples: The Commission inherited from the four main-line railway companies more workshops than the integrated scheme needed, and now has, somehow or other, to solve the problem.

Mr. R. Gower (Barry—C.): Throughout the changes in the arrangements for the

making of wagons and the like, the B.T.C. has worked in the closest touch with the railway trade unions.

Mr. Marples: I am quite certain, having visited the B.T.C. and having seen the trade union representatives there, that there is great harmony between the Commission and the trade union leaders.

Mr. E. Popplewell (Newcastle-on-Tyne—Lab.): The Minister says he has given no directive at all, but I hope he will have another look at this matter. The policy of the Commission is to close railway workshops, and to hand this type of work to private enterprise. Some members of his Area Boards have deliberately said that the B.T.C. is doing too much of its own work, and that that work should go to private enterprise. In the meantime, as many thousands of railway shopmen are wondering where their jobs will be in next week or so, will the Minister have another look at this, bearing in mind the sugestion that was put to his predecessor when we had our last debate on this industry, that these workshops should be used to meet other railway requirements ?

Mr. Marples: I will certainly look at the last debate in the House. I will also see that the Chairman of the Commission has a note of these present exchanges, and when I next meet him, I should like to discuss this question with him.

Mr. Noel-Baker gave notice that he would raise this question at the earliest opportunity.

Station Closures Near Leicester

Mr. B. Janner (Leicester N.W.—Lab.): asked the Minister of Transport on November 4 what were the recommendations of the appropriate Consultative Committee on the proposals to close a large number of stations near Leicester, and what his intentions were with regard to these recommendations.

Mr. John Hay, Parliamentary Secretary, in a written answer: I am informed that the London Midland Region of British Railways has told the Transport Users' Consultative Committee for the East Midland area that it is considering closing certain stations in the vicinity of Leicester. No proposals have so far been put before the Committee.

Staff and Labour Matters

Strike of Dining-Car Attendants

The strike of dining-car attendants coming under the control of the British Transport Commission's Hotels & Catering Services terminated on November 6 following a meeting between the negotiating committee of the N.U.R. and representatives of the Restaurant Car Services Regional Councils.

An understanding was reached at this meeting as to the terms under which work would be resumed but difficulties subsequently arose when the representatives of the regional councils afterwards met the strike committee. After hearing the report of representatives, the strike committee adjourned to clarify the position with the N.U.R. and this resulted in an assurance being given by the President of the N.U.R. that the union would insist that the new Pullman services should be operated by Hotels & Catering staff. It was also promised that the union would do its utmost to bring about assimilation of the Pullman Car Company's services with those operated by the Hotels & Catering Services of the Commission.

The decision to call off the strike was accompanied by a request that a special delegate meeting of the N.U.R. be called to reiterate the policy adopted at the union's annual conference that any extension of Pullman Car services should be opposed.

Contracts and Tenders

Diesel train vehicles for British Railways' passenger services

The British Transport Commission has placed orders to the value of £6,000,000 with British Railways for 390 diesel train vehicles for passenger services in London, Liverpool, Manchester, Leicester, Nottingham, Hull, North Wales, and Scotland. The railway workshops at Swindon, Western Region, will build 51 of the vehicles. Eastleigh Works, Southern Region, will build 57, and the other 282 will be constructed by the carriage works at Derby, London Midland Region. All these vehicles will be in service within the next two years.

Of the 282 vehicles to be built at Derby, 104 will form 26 four-car diesel train sets, six of them for services between Liverpool and Manchester, and 20 sets (additional to 15 previously ordered) for suburban services from Marylebone Station. The Scottish Region will have 78 of the other vehicles to be built at Derby, and these will form 26 three-car trains which will be allocated to Scottish routes on delivery. The remaining 100 vehicles will be built as 50 two-car units; 21 of them will be for services between Nottingham and Leicester and other stations in that area on the former Great Central Line, 18 will be for services in or around Manchester, and 11 sets will be used on lines in North Wales. Inter-city diesel trains are to be introduced between Hull and Liverpool, serving other important points *en route*, and the Swindon workshops are to build 51 vehicles for these services. Each inter-city diesel train will be of six vehicles and will include a buffet car. The 57 vehicles to be built at Eastleigh Works will form 19 three-car train sets. These multiple-unit sets will be coupled to run as six or nine-car business trains serving Oxted, East Grinstead, Tunbridge Wells West, and Uckfield. In off-peak hours the diesel trains will work as three-car sets, and will be used for almost all the London services on this line. These diesel-electric trains will operate most of the services on the Oxted line until it is electrified, when they will be transferred to other non-electrified lines.

Victorian Government Railways has placed the following contracts for the Melbourne-Albury standard-gauge project:

Hirst Bros. (Contractors) Pty. Ltd.: earthworks for the Mangalore-Wodonga section at a cost of £300,000

Thiess Bros. (Victoria) Pty. Ltd.: earthworks for the 58-mile Broadmeadows-Mangalore section

Gilmore Quarries Pty. Ltd.; Joseph Pyke ; J. Rayner ; and Stewarts Plant Hire Pty Ltd.: supply of 360,000 yds. of ballast for the Mangalore-Wodonga section.

British Railways, Eastern Region, has placed the following contracts:—

Charles R. Price: demolition of existing station and platform buildings and construction of new station building, reinforced concrete lay-by-deck, new platform buildings, and accommodation for London Transport Executive staff at Barking Station

W. & C. French Limited: reconstruction of portion of underline bridge carrying Hythe Tramway over River Colne between Colchester and Hythe

Shephard, Hill & Co. Ltd.: draining and blanketing of track formation between Billericay and Wickford

J. Ibbotson Limited: cleaning and painting of bridges between Dinnington and Kirk Sandal

Drake & Gorham (Contractors) Limited: supply, delivery and erection of electrical installations at Hackney Downs, Rectory Road, Stoke Newington, Stamford Hill, and Seven Sisters Stations

George E. Taylor & Co. (London) Ltd.: supply, delivery, and erection of electrical installations at Bruce Grove, White Hart Lane, Silver Street, Lower Edmonton, and Bush Hill Park Stations

Haines & Sheppard Limited: supply, delivery, and erection of electrical installations at Clapton, St. James Street, Hoe Street, Wood Street, and Highams Park Stations.

British Railways, North Eastern Region, has placed the following contracts :—

Wakefield Dick Oils Limited : oiling equipment at Bradford Manningham Motive Power Depot

R. Costain Limited : erection of new offices for the Area Traffic Manager, Newcastle

International Furnace Equipment Co. Ltd.: four gas-fired furnaces at Darlington Locomotive Works

W.S. Weston Limited : electrical installation at Leeds Central Signalbox " A "

Turnerised Roofing Company : repairs to Keighley Goods Shed roof by " Turnerised " process

Finlay Engineering Limited : provision of a rail bending machine and two rollers for Crofton Permanent Way Depot

D. Crouch Limited : earthworks and drainage in connection with the opening out of Corbridge Tunnel

Reliance Telephone Company : an automatic telephone exchange at Newcastle Central Station

Raines (H. & V.) Limited : alterations to the heating and hot water system at Bradford Hammerton Street Diesel Depot.

The Special Register Information Service Export Services Branch, Board of Trade, has received calls for tenders as follow :

From Honduras:

2 railbuses capable of carrying 75 to 85 passengers seated and 25 to 35 standing on journeys of around 62 miles.

The issuing authority is the National Railway of Honduras. Bids should be sent in duplicate to the Office of the National Railway of Honduras, San Pedro Sula. The closing date is November 23, 1959. Prices should be c.i.f. Puerto Cortes in U.S. Dollars. Specifications and conditions of contracts will be supplied against a returnable deposit of $2.50. The Board of Trade reference is ESB/26160/59.

From Portuguese East Africa :

30 cattle wagons, 15 of four axles and 15 of two axles.

The issuing authority is the Ports, Railways & Transport Department, Lourenço Marques. The tender No. is 2/60. A provisional deposit of Esc. 150,000 must be made by tenderers. The closing date is January 29. 1960. Local representation is essential. The Board of Trade reference is ESB/25916/59.

From Chile :

68,500 *tonnes* of rails, type K, section 119 CF-1, in 12, 18, or 24 m. lengths

38,000, 28,500, or 19,000 fishplates for the above, the exact quantity dependent upon the length of rail purchased

30,100 *tonnes* of rails, type Z, section 100 RA in 12, 18, or 24 m. lengths

XUM

60,000, 45,000, or 30,000 fishplates for the above
13,800 *tonnes* of rails, type Y, section 80AS in 12 m. lengths
62,000 fishplates for the above
500 sets. of KJ combination fishplates
200 sets of KZ combination fishplates
100,000 anti-slip plates for the type K rails mentioned above
300,000 anti-slip plates for the type Z rails mentioned above
430,000 anti-slip plates for the type Y rails mentioned above
580 *tonnes* of flexible washers.

The issuing authority and address to which bids should be sent is Sr. Jefe, Depto. de Materiales y Almacenes, Ferrocarriles del Estado, Casilla 4742, Correo 2, Santiago. The tender No. is Group No. 34. The closing date is December 4, 1959. The Board of Trade reference is ESB/25372/59.

From Iraq :

7 electrically-operated automatic level crossing barriers and warning signals.

The issuing authority and address to which bids should be sent is the Director-General, Iraqui State Railways, Baghdad. The closing date, November 25, 1959. Local representation is essential. The Board of Trade reference is ESB/25489/59.

Further details relating to the above tenders together with photo-copies of tender documents can be obtained from the Branch (Lacon House, Theobalds Road, W.C.1).

Notes and News

Southern Railway Dramatic Society.—The next production of the Southern Railway Dramatic Society will be at the Scala Theatre on December 1, commencing at 7 p.m. The play to be presented will be " As Long as They're Happy," a comedy by Vernon Sylvaine.

1,000th Derby-Built Railcar.—The British Railways Carriage & Wagon Works Derby, London Midland Region, recently completed its 1,000th diesel railcar. This vehicle is also the 414th lightweight aluminium-alloy railcar to be built there since production began in 1954. It is of the 300-h.p. type supplied as basic two-car sets for the Eastern, North Eastern, and London Midland Regions. Thus Derby Works can claim to have built for British Railways the largest number of light-alloy railcars operating on any system throughout the world. The balance of the 1,000 are all-steel units built for the Eastern, London Midland, and Western Regions. At a ceremony, Mr. A. E. Bates, Works Manager, congratulated representative staff members concerned with railcar construction.

Collision Between Goods Train and Empty Coaching Stock.—A goods train ran into the back of some empty coaches of a passenger train at Finsbury Park Station, British Railways, Eastern Region, last Monday. Four people, a driver, a fireman, and two guards, were slightly hurt. One wrecked coach hung on the edge of the road bridge to the north of the station, another lay on its side, and a third was extensively damaged. The goods train was derailed. The locomotive toppled on its side and stopped near a steep embankment.

" Sailor, Beware ! "—The Great Western Railway (London) Dramatic Society added further to its high reputation by last week's performance of " Sailor, Beware!" the well known comedy by Philip King and Falkland Cary. Miss Dorothy Lees and Mr. Walter Jenkins, two stalwarts of the society, gave admirable performances as Emma Hornett and Carnoustie Bligh. Miss Jane Munday as usual gave an excellent interpretation in the role of Edie Hornett. Mr. Stanley Pearson was admirably suited to the role of Henry Hornett and Miss Audrey Davis was excellent as Mrs. Lack. The part of Albert Tufnell was well played by Mr. David Mead, and Miss Shirley Doran as Daphne Pink and Miss Joyce as Shirley Hornett gave polished performances. Mr. Roy Morris's was an excellent interpretation of the part of The Reverend Oliver Purefoy.

New Unpainted Aluminium Trains on L.T.E. District Line.—Two six-car and one eight-car trains of unpainted aluminium " R " stock cars have gone into service on the District Line of London Transport Executive. Each six-car train is made up of four new non-driving motor cars with unpainted aluminium alloy bodies, and two converted driving motor cars, which have been painted to match. The eight-car train has five new and three converted cars. The 13 new cars, known as " R.59 " stock, are generally similar to the " R.49 " class vehicles, which came into use in 1952. Built by the Metropolitan-Cammell Carriage & Wagon Co. Ltd., the " R.59 " stock cars have bodies of aluminium alloy construction, left unpainted, except for a narrow red waist band. The interior is similar to that of the earlier vehicles, including the provision of fluorescent lighting. All the new vehicles are non-driving motor cars. To complete the trains, seven " Q.38 " trailer cars have been converted at the L.T.E. Acton Works to driving motor cars.

Mr. A. E. Bates, Works Manager, Carriage & Wagon Works, British Railways, Derby, and members of the team engaged in constructing the 1,000*th railcar*

Bright Chromium Plate.—In introducing its revised publication *British Standard* 1224: 1959, *Electroplated Coatings of Nickel & Chromium*, the British Standards Institution this week sponsored a scheme devised by the Mond Nickel Co. Ltd., in collaboration with the British Non-Ferrous Metals Research Association, to encourage a demand for increased durability of bright nickel-chrome finishes. The B.S.S. details three corrosion-resistance qualities. An improved instrument, the B.N.F. Plating Gauge, has been developed for non-destructive testing of the nickel undercoat thickness upon which satisfactory results largely depend. Manufacturers which adopt the new Standard will advertise the fact by affixing special coloured labels to electroplated products.

Exporting to the Middle East.—The Advisory Council on Middle East Trade has published a booklet entitled " Exporting to the Middle East," describing the opportunities which exist for the expansion of British Trade with the Middle East, following the rapid increase in Middle East oil revenues over the last few years. The booklet, which is issued free of charge, is being distributed widely to manufacturers and trade associations, and aims to emphasise the importance of the Middle East market, the past achievements of British industry there, and the opportunities which now exist. It is hoped that the information will help to stimulate a greater interest in the area generally and make an increasing number of manufacturers and traders alive to the opportunities for expanding British exports to that part of the world.

Former Driver Sentenced for Damaging Signal Equipment.—Four years' imprisonment was imposed at York Assizes last week on a former engine driver, Thomas Buck, of Scarborough, who pleaded guilty to seven charges of sabotage and theft. Counsel for the prosecution said that Buck operated on a system similar to that used by members of the resistance in occupied countries during the war, to disturb railway communications. He had been dismissed from the railway service in 1949 for offences against regulations. As a former driver he knew how to disrupt the signalling by removing essential parts. On August 1 a signalman in a cabin near Scarborough, in British Railways, North Eastern Region, heard a click indicating there was something wrong. He had to put the safety regulations into operation at a time of intensive traffic on the York to Scarborough line. Buck was arrested when police saw him cross the line. They found that he had a pair of pliers, a table knife, and a piece of rubber sheeting.

Conveyancer Fork Trucks Limited Development.—Following its policy of expanding the range of materials handling equipment sold by its subsidiary, Conveyancer Fork Trucks Limited, Electro-Hydraulics Limited of Warrington, England, announces that it has taken over Scott Electric Vehicles Limited, Kidderminster. This company manufactures electric towing tractors and trucks, and recent design developments have resulted in the introduction of Scott Electric trucks equipped with the E.M.I. Robotug (electronic guidance) control for driverless operation. The

board of the new company will be as follows: Chairman & Managing Director: C. W. Sharp; Sales Director: L. Rumley; Production Director: T. C. Wright; Technical Director: J. D. Coldwell; with R. Edwardes, Secretary. Mr. E. M. Scott will continue as Manager of the company during reorganisation and subsequently will remain as Consultant. The future design, manufacture, sales, and service of Scott Electric trucks will extend the Conveyancer range to cover almost all aspects of materials handling. The current range also will include the Shortland range of straddle carriers, for which Conveyancer was appointed sole distributor on May 1, 1959.

Lunch-Hour Railway Films at St. Pancras.—Free lunch-hour holiday films are to be shown on No. 7 platform at St. Pancras on November 18. Two of these will feature Switzerland and North Wales. British Railways plan to show films of Italy, France, Norway and also Great Britain on succeeding Wednesdays, apart from the Christmas and New Year period.

British Railways to Repeat All-in Tours to Ireland.—British Railways and Creative Tourist Agents in conjunction with Coras Iompair Eireann are to repeat the all-in tour arrangements to Ireland next season. These tours, which will start each Tuesday from Euston and Paddington, Birmingham, Manchester, Cardiff, Bristol, Newcastle-upon-Tyne and other provincial towns, will cover six different holiday centres in Ireland. All-in charges, ranging from £20 for the week, will cover train and sea journey, meals en route, hotels, excursions and gratuities.

Mobil Oil Company Bridging Service to Coventry.—Within the next few weeks, the Mobil Oil Company will introduce a new railway bridging service to Coventry from its Coryton terminal, which stands adjacent to the refinery. Block trains of 20 petroleum tank wagons, running on a timetable schedule, will each transport nearly 12,000 gal. of petroleum products. After being filled at Coryton terminal, the wagons will be shunted along Corringham Light Railway to the Thameshaven branch of the London, Tilbury & Southend line by the company's own diesel engines, which will also take back to the terminal empty wagons returned from Coventry.

Massey-Ferguson Limited New Organisation.—Massey-Ferguson Limited has announced a new form of organisation and creation of a corporate management group which will devote its entire attention to the expanding world-wide operations. The announcement is by W. E. Phillips, Chairman and Chief Executive Officer, and Mr. A. A. Thornbrough, President. Operations have been concentrated into five centres, each headed by a General Manager and identified as North American, United Kingdom, French, German, and Australian operations. The establishment of a new North American operation, under Mr. T. J. Emmert, Vice-President, was announced recently. The new group of corporate executives, who previously to a large degree have been directly involved in North American activities, will not be free to assist the President fully in all operations of the world-wide company.

More New Lifts on the L.T.E. Underground.—Ten more station lifts on the London Transport Underground are to be renovated. They are at Essex Road, Northern City Line; Lancaster Gate, Central Line; London Bridge, Northern Line; and South Kensington, Piccadilly Line. The work is being carried out under London Transport Executive long-term programme of modernising and re-conditioning older-type tube lifts. This will give them at least a further 25-30 years of life and will save heavy replacement costs. All will be fitted with new motors and other equipment, and better lighting. The oldest, at Lancaster Gate, have been in constant use since 1900, when the Central Line was opened, and are the last of their type left in service on the Underground. The Essex Road lifts were installed in 1904 and those at South Kensington two years later. Work has already started at Essex Road and will begin soon at the other three stations. It will take about two years to complete.

Colloidal Graphite Limited Change of Address.—The offices and factory of Colloidal Graphite Limited have been transferred to Sheaf Island Works, Pond Hill, Sheffield, 1, tel.: Sheffield 27397.

Five More Clyde Steamers to be Fitted with Radar.—Five more vessels of the Caledonian Steam Packet Co. Ltd., are to be fitted with radar. They are the *Duchess of Montrose*, *Duchess of Hamilton*, *Queen Mary II*, *Jeanie Deans* and *Waverley*. This means that the whole fleet of 15 vessels will be so fitted. The equipment is being supplied and fitted by Decca Radar Limited.

Awards to London Bus Drivers.—Bronze crosses for 25 years' safe driving were presented to 99 London bus drivers at Caxton Hall, Westminster, on October 28. In addition, London Transport has given £10 to each driver in recognition of his good example to other road users under conjested conditions in all weathers. The awards were presented by Mr. John B. Burnell, Operating Manager of the London Transport Central Road Services network.

Philips Electrical Limited's South West Regional Headquarters.—Philips Electrical Limited has recently opened a new and enlarged headquarters for its South West Region, at 51 Victoria Street, Bristol, telephone: 93311. The building covers an area of 17,696 sq. ft. and has four storeys which house offices, stores, a trade counter, and a showroom which also serves as a lecture room. A section of the showroom devoted to electrical appliances has full demonstration facilities, and the lighting section includes a selection of lamps for all purposes and a display of fittings.

The Field Sales Supervisor.—A publication of the British Institute of Management, "The Field Sales Supervisor," is the report of a group of senior marketing executives and training officers drawn from industries including advertising, and civil, mechanical, and electrical engineering. The size of the sales forces studied varied from less than 20 to several hundred salesmen. The publication is divided into 16 sections, the last of which is a list of the 14 salient points that should be taken into account when considering the role of the field sales supervisor. The book may be obtained from the B.I.M., 80, Fetter Lane, E.C.4, price 17s. 6d. or 14s. to B.I.M. members (plus 9d. postage).

W. T. Henley's Telegraph Works Co. Ltd. Film.—The film "Cable Laying Journey," showing the work carried out by W. T. Henley's Telegraph Works Co., Ltd., in the manufacture, supply, jointing, and supervision of installation of some 88 miles of 33-kV. three-core oil-filled cable and pilot-supervisory cable for British Railways, Southern Region, Kent Coast electrification scheme, had its premiere at the A.E.I. cinema, Grosvenor Place, London, last Tuesday. The sequences showing the actual installation of the cable were filmed by day and by night. Daytime cable-laying operations include those at Selling Tunnel, where the cable was taken over the hill instead of through the tunnel; alongside the track near Whitstable where the cable is installed in ducts under the track; and at the foot of the cliffs between Dover and Folkestone. The operations involved in the making of an oil-filled cable joint are also included in the film. "Cable Laying Journey," produced by John Byrd Productions, is in 16 mm. and runs for 30 min. It is available on loan on application to the Advertising Manager, W. T. Henley's Telegraph Works Co., Ltd., 51/53, Hatton Garden, London, E.C.1.

Tube Investments Limited Preliminary Results.—The board of Tube Investments Limited, after considering the preliminary results of the group for the year to July 31, 1959, is to recommend at the annual general meeting on December 14 a final ordinary dividend of 12½ per cent actual. An interim dividend of 7½ per cent already has been paid.

Institution of Locomotive Engineers.—A meeting of the Institution of Locomotive Engineers will be held in the Lecture Hall of the Institution of Mechanical Engineers, 1, Birdcage Walk, S.W.1, on December 15, at 5.30 p.m., at which a paper will be presented by Mr. W. L. Topham on "Methods of reducing flange wear on diesel and electric locomotives."

Protest Against Closing of Felixstowe—Harwich Ferry.—The town councils of Harwich and Felixstowe and the rural councils of Tendring and Deben are protesting to the Transport Users' Consultative Council against the closing by British Railways of the Felixstowe—Harwich ferry. The distance between the two towns is 10 min. by ferry boat and 35 miles by road.

Innovation on Dover-Ostend Mailboats.—Belgian Railways & Marine has introduced a refreshment service on the Dover-Ostend mailboats. The second class restaurant has been closed and the first class restaurant is now available to all passengers. Second class restaurants have been dispensed with and are being converted in readiness for next season into snack-cafeterias. This new service will serve more than 1,000 passengers, and provide a choice between first class restaurant and cafeteria. While prices in the restaurant will remain unchanged, specialities in keeping with English taste will be offered in the cafeteria at prices varying from 1s. to 3s., service included.

Amalgamation of Belgian Companies.—Five Belgian companies have now amalgamated and a new company, the title of which will probably be Société Belge de l'Industrie, is being formed to take over the assets and liabilities of the five companies. The concerns involved are Les Ateliers de Construction de Familleureux; Société Métallurgique d'Enghien St. Eloi; S.A. des Forges Usines et Fonderies de Haine-Saint-Pierre (F.U.F.); S.A. des Ateliers de la Dyle, Louvain; and Ateliers de Construction Mecaniques de Tirlemont. It has been provisionally agreed that Familleureux will be the sole builders of railway rolling stock and Enghien St. Eloi at Enghien will continue to make bridges, steel buildings, and bolts and nuts. The works at Manage (formerly La Construction) will no longer build any rolling stock and its activities will be confined to light girder work, welded tubes and certain aluminium products. F.U.F. will no longer manufacture wagons and bogies, but will continue with its locomotive section and large forgings, and La Dyle will no longer build wagons or carriages and will continue with its girder work, pressings, and springs. There will be no change in the Tirlemont programme; these works build sugar refinery plants, and coal screening apparatus.

XUM

Forthcoming Meetings

November 16 (*Mon.*).—Permanent Way Institution, London Section, at the Headquarters of the British Transport Commission, 222, Marylebone Road, N.W.1, at 6.30 p.m. Paper on "Signalling for modernisation," by Mr. R. A. Green.

November 17 (*Tue.*).—Institution of Locomotive Engineers, at the Institution of Mechanical Engineers, 1, Birdcage Walk, Westminster, S.W.1, at 5.30 p.m. Paper on "The Swindon-built diesel-hydraulic locomotive," by Mr. G. E. Scholes.

November 18 (*Wed.*).—Peterborough Technical College, Railway Discussion Group at Eastfield Road, at 6.45 p.m. Paper on "Hotels," by Mr. F. G. Hole, General Manager, Hotels & Catering Services.

November 18 (*Wed.*).—Institution of Electrical Engineers, at Savoy Place, London, W.C.2, at 5.30 p.m. Paper on "Research on the performance of high-voltage insulators in polluted atmospheres," by Mr. J. S. Forrest, Mr. P. J. Lambeth, and Mr. D. F. Oakeshott.

November 19 (*Thur.*).—British Railways, Western Region, London Lecture & Debating Society in the Headquarters Staff Dining Club, Bishop's Bridge Road, Paddington, W.2, at 5.45 p.m. Debate with Oxford University Railway Society —"That the desire for speed in modern life is to be deplored."

November 19 (*Thur.*).—Institute of Traffic Administration, Glasgow Centre, at the Kenilworth Hotel, Glasgow, at 7.45 p.m. Paper on "Continental travel," by Mr. Tom Jackson.

November 19 (*Thur.*).—Diesel Engineers & Users Association, at the Institute of Marine Engineers, The Memorial Building, 76, Mark Lane, E.C.3, at 2.30 p.m. Paper on "Piston assemblies for compression ignition engines," by Mr. J. E. Robinson.

November 19 (*Thur.*).—Institute of Transport, Bournemouth & Poole Group, at the Town Hall, Bournemouth, at 6 p.m. Paper on "Transport accountancy," by Mr. H. Harding.

November 19 (*Thur.*).—Institute of Transport, Northern Ireland Section, at 21, Linenhall Street, Belfast, at 6 p.m. Paper on "Copenhagen 1959," by Mr. R. Flack, Mr. W. J. Topley and Mr. R. V. Turkington.

November 20 (*Fri.*).—Institute of Transport, Tees-side Section, at the Cleveland Scientific & Technical Institution, Middlesbrough, at 6.30 p.m. Paper on "How much art in advertising," by Mr. H. D. Muirhead, Publicity Division, British Transport Commission.

November 20 (*Fri.*).—South Wales & Monmouthshire Railways & Docks Lecture & Debating Society, Swansea Section, in the Board Room, Dock Manager's Office, Adelaide Street, Swansea, at 6.45 p.m. Paper on "The role of the economist in the mid 20th century," by Professor A. Beacham, University College of Wales, Aberystwyth. Joint meeting with the Institute of Transport, South Wales & Monmouthshire Section.

November 21 (*Sat.*).—Railway Correspondence & Travel Society, South of England Branch, at the Palmer Hall, West Street, Reading, at 6 p.m. Paper on "The Claughtons of the L.N.W.R." by Mr. R. M. Tomkins.

November 21 (*Sat.*).—Railway Correspondence & Travel Society, Sussex & Kent Branch, at the Railway Hotel, Brighton, at 6.30 p.m. Film show by Mr. A. Endersby, "The last days of steam on the Chatham line."

November 23 (*Mon.*).—Railway Correspondence & Travel Society, Northampton Branch, at the Liberal Club, Castilian Street, Northampton, at 7.30 p.m. Paper on "Pre-grouping engines at work in the 1950's," by Mr. S. Summerson.

November 24 (*Tues.*).—Institution of Civil Engineers, Great George Street, Westminster, S.W.1, at 5.30 p.m. Paper on "The mechanisation of railway civil engineering maintenance works," by Mr. Arthur Dean, Mr. Peter Chalmers, and Mr. A. C. Layhe.

November 24 (*Tues.*).—Institution of Railway Signal Engineers, Bristol Section, at Chippenham, at 6 p.m. "Any signalling questions?" Informal meeting.

November 24 (*Tues.*).—Railway Correspondence & Travel Society, East Midlands Branch, at the N.C.S. Guild Room, Toll Street, Nottingham, at 7.30 p.m. Railway recordings in colour and sound presented by Mr. R. C. Anthony.

November 25 (*Wed.*).—Peterborough Technical College, Railway Discussion Group, at Eastfield Road, at 6.45 p.m. Paper on "A trader looks at railways," by Mr. S. Robinson, Transport Manager, British Sugar Corporation.

November 25 (*Wed.*).—British Railways Southern Region, Lecture & Debating Society, at the Chapter House, St. Thomas Street, S.E.1, at 6 p.m. Visits of the Society in retrospect—an exhibition of films, slides, and photographs.

November 26 (*Thur.*).—Institution of Civil Engineers, at Great George Street, Westminster, S.W.1, at 5.30 p.m. Informal debate: "Is the practical training of civil engineers adequate?" Principal speakers: Mr. G. A. Wilson, Mr. Arthur Dean, and Mr. Charles Brand.

November 26 (*Thur.*).—Institution of Electrical Engineers, at Savoy Place, London, W.C.2, at 5.30 p.m. Paper on "The application of low-pressure resins to some high-voltage switchgear designs," by Mr. T. R. Manley, Mr. K. Rothwell, and Mr. W. Gray.

Railway Stock Market

Stock markets have been somewhat less active, and industrial shares lost a little of their exceptional strength. There was renewed demand for steels, some of which advanced to fresh high levels. Movements among foreign rails were again small with no definite trend, but, compared with a week ago, International of Central America strengthened from \$24⅜ to \$25½ with the preferred stock at \$115½.

Antofagasta ordinary stock improved fractionally at 17, though the preference eased to 27, but the 5 per cent (Bolivia) debentures remained at 94½.

Costa Rica ordinary stock lost a point at 22½; the first debentures remained at 80½. Guayaquil & Quito assented bonds were 81½. Chilian Northern first debentures 60 and Paraguay Central prior debentures 18½.

Canadian Pacifics at \$47⅛ compared with \$48 a week ago. The 4 per cent preference eased fractionally to 58¾, as did the 4 per cent debentures at 67⅝. White Pass shares firmed up to \$13¾. Mexican Central "A" bearer debentures were 56½, and San Paulo Railway 3s. units 1s. 6d., while Brazil Railway bonds kept at 7.

West of India Portuguese capital stock remained at 106½, Nyasaland Railways shares at 10s. 6d. and the 3½ per cent debentures were little changed at 58¾. Elsewhere, Emu Bay 4½ per cent debentures were quoted at 38 and the irredeemable debentures at 28. Midland of Western Australia ordinary stock was quoted at 5½ and the income debenture stock at 13½.

Among shares of locomotive builders and engineers Charles Roberts 5s. shares continued to attract much attention, and held most of their recent advance, despite the denial of reports that the group's hire purchase interests might be hived off. These shares, which were 19s. a week ago, have receded further to 18s. 3d., but a fortnight ago they were 15s. 3d. Moreover, Beyer Peacock 5s. shares have firmed up from 8s. 9d. to 8s. 10½d. and Wagon Repairs 5s. shares from 9s. 3d. to 9s. 6d., but Gloucester Wagon 10s. shares eased to 14s. 3d. and G. D. Peters were again quoted at 18s. 1½d.

North British Locomotive receded from 9s. 6d. to 9s. and Birmingham Wagon came back afresh from 30s. 10½d. a week ago to 30s.

Westinghouse Brake attracted renewed attention and were 52s. 9d. compared with 52s. 3d. a week ago. T. W. Ward rose afresh from 141s. 3d. to 143s. 9d. on the chairman's confident annual statement, but after their further sharp advance, there has been a partial reaction from 42s. 6d. to 40s. 7½d. in Pressed Steel 5s. shares. Dowty Group 10s. shares were quite well maintained on balance at 42s. 3d. Pollard Bearing 4s. shares eased to 35s. 9d.xd., and Ransomes & Marles 5s. shares rallied strongly from 24s. 6d. to 27s. Davy-United were good at 103s. 6d., Mather & Platt moved up to 49s. 3d. and Enfield Rolling Mills to 58s. 6d. Tube Investments fluctuated, despite the higher dividend, but at 116s. 9d. were 1s. 3d. higher on balance. George Cohen 5s. shares were 15s. 9d. and Ruston & Hornsby 25s. 7½d. Renold Chain lost a few pence to 54s. 9d. and Stone-Platt eased slightly to 62s., while Vickers came back to 29s. 10½d.

Associated Electrical receded from 65s. 9d. to 63s. 9d., General Electric from 44s. to 42s. 9d. while English Electric have come back from 48s. to 46s. 9d. and Crompton Parkinson 5s. shares from 18s. 9d. to 18s. Steel shares have been very active accompanied by talk of more new issues, and some moved to new peak levels. United Steel, for instance, were 74s. 6d., a new all-time high, as were Dorman Long at 60s. 6d. and Colvilles at 60s.

OFFICIAL NOTICES

BRITISH TRANSPORT COMMISSION

BRITISH TRANSPORT COMMISSION require Assistant Development Engineer (Design) for Locomotive Carriage & Wagon Development Unit, located at Darlington. Applicants should have a good general education to Higher National Certificate in Mechanical Engineering or equivalent, have served an apprenticeship in a Railway or contractor's works, preferably engaged on Railway rolling stock, and possess intimate knowledge of the design of such stock. Capable of taking charge of an office engaged on new developments in connection with locomotives, carriages and wagons.

Salary range: £1,590—£1,920. Superannuation Scheme. Certain travel facilities. Medical examination. Write, giving age, qualifications and experience, to Director of Establishment, British Transport Commission, 222 Marylebone Road, London, N.W.1, within 14 days. Addressed envelope for acknowledgment.

SHOTBLASTING in-situ by the "on-site" experts. Organic and Inorganic Coatings applied. Anything, anywhere at competitive rates. Darnall Shotblasting Co. Ltd., Doctor Lane, Sheffield ,9. Telephone 42896.